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LECTURES
ON
VETERINARY MEDICINE,
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BY
MR. YOUATT.

LECTURE XLI.

THE NINTH AND TENTH (THE GLOSSO-PHARYNGEAL AND SPINO-VISCERAL MOTOR) NERVES — THEIR ORIGIN, COURSE, AND FUNCTION.

The Lateral Column of the spinal chord appears in view on each side immediately posterior to the pons varolii. It is distinct from the very beginning in the human being, under the name of the *corpus restiforme*. The corpus olivare separates it from the central column on the inferior surface of the medulla oblongata, and is in a manner interposed between the central and the lateral columns, while there is a distinct sulcus on each side, which unites at the base of the corpus olivare, and forms an evident furrow that can be followed along the whole course of the spinal chord. On the superior surface of the chord, and commencing within the fourth ventricle, there is likewise a line of demarcation between the central and lateral columns. There is no distinct corpus olivare in the solipede or the ruminant, or any sulcus on either side of it; but *the lateral column* is as evident, or more so. The sulcus between it and the central column cannot be overlooked; and the rounded head of the column is composed of the corpus olivare, compressed and flattened out, with which the corpus restiforme is blended, and in which it is lost.

The Nerves from the Lateral Column.—From the sulcus between the corpus olivare and restiforme, in the human being, and from the anterior surface of the spinal chord and the front of the lateral column, in the same subject, (but from the side of the rounded head of the lateral column in the quadruped), there arise three distinct sets of nerves which now demand consideration. One portion of the seventh (portio dura), the ninth, or glosso-pharyngeus, and the tenth or cerebro visceral motor nerve. The seventh, with its double root, I will for the present pass over—we are not prepared for its consideration. I will proceed to the ninth.

The Ninth Pair of Nerves, or the Glosso-Pharyngeus.—This has been usually described as a branch of the tenth, or cerebro-visceral, but it is perfectly distinct from it. The glosso-pharyngeus arises from the lateral column of the medulla oblongata, immediately posterior to the inferior root of the seventh. It consists of an uncertain number of filaments, generally four or five, small, arising in a line, approximating and uniting. Professor Mayo says that a small ganglion is formed upon them. Although I had not observed it until it was pointed out by that accurate anatomist, for it is a very small one, I am disposed to acknowledge its existence, and I regard the discovery of it as one of singular importance. This ganglion being formed, the nerve pierces the dura mater separately from the par vagum (as it used to be called, and with which it should never have been confounded), and is seen deep under the angle of the jaw. It passes over the internal carotid, "and runs," as Mr. Percivall well describes it, "forwards and downwards," giving branches to the styloid and digastric muscles—anastomosing with the cerebro-visceral and the accessory nerve—sending fibrils to the constrictor muscles of the pharynx—then dividing into other branches—anastomosing with the lingual nerve, and finally losing itself in the base of the tongue.

The Function of the Glosso Pharyngeus.—Now, Gentlemen, let us pause. We must tread cautiously here. Where do we find this glosso-pharyngeal nerve? On the fore part of the corpus restiforme in the human being, that is on the anterior (inferior) surface of the spinal chord, and therefore at once begotting the suspicion that it has a motor character: but in the quadruped, arising from the side of the head of the co-

lumn—more equally and decidedly between the motor and sensitive columns of the spinal chord, and occupying a kind of border ground between them. What is its anatomical character? It arises by minute fibrils in a line, resembling a motor nerve; these fibrils pass through, or form, a ganglion like a sensitive nerve; and this ganglionic nerve with a motor origin, is distributed over muscles or parts, some of which are already plainly and plentifully supplied with nervous influence from the cerebral or spinal nerves, while from others this influence is withheld, or bestowed indirectly and sparingly.

The portion of the Nerve belonging to the Tongue.—We call it the glosso-pharyngeal; belonging to the tongue and the pharynx. Now the tongue is plentifully supplied from the linguales and seventh pair,—nerves of voluntary motion,—and the fifth pair, a sensitive nerve. Although this nerve from the lateral column were taken away, there would be scarcely any part of the frame more lavishly endowed with nervous influence. But the muscles of the tongue are connected in a more decided way than many of the voluntary muscles are, with organic life, and with two of its main functions—digestion and respiration.

The Function of this Nerve as connected with Digestion.—The spinal and cerebral motor nerves are under the influence of the will; but before the understanding can be said to have existence, or a volition, the result of some mental act, can be formed, the animal requires nutriment, and is guided to it, and to the reception and the disposal of it, unerringly and perfectly. The foal, the calf, the lamb, seek out the teat, and, with an accuracy on which the experience of after existence cannot improve, extract and swallow the milk. The principle of organic life is in full power, and has been so long ere this; and we shall, perhaps, by-and-by, see reason to conclude, that these nerves from the lateral column are influenced by this principle before the will could issue its mandate, and likewise designed afterwards to call into requisition, and to control and combine the action of the voluntary muscles when the purposes of organic life require it. We are little conscious of the varied influence of the muscles of the tongue in the act of deglutition. The animal acquired the power of performing this organic operation without experience, and without mental exertion; and he continues to perform it, I will not say without an effort of the will, but in perfect unconsciousness of the various steps of the process.

This a Respiratory Nerve as it regards the Tongue.—The tongue is indirectly concerned with respiration;—not much, probably, in undisturbed breathing;—but when respiration is quickened, as in rapid motion, or from any other cause, we plainly see how much the motions of the tongue are influenced, and especially in those animals in which it is only slightly confined by the frænum. The tongue of the horse is somewhat closely tied down by the frænum, that it may constitute a convenient and firm cushion for the bit; but where it is freer, as in the ox, and especially the dog, if the breathing is a little hurried, the tongue is protruded from the mouth, and, in the dog, is in constant motion. The connexion of this with the mechanical act of respiration, has been explained in a former lecture.

Conclusion with regard to the Function of this Nerve.—Then I begin to form some idea of the intention and function of these nerves from the lateral column distributed to the tongue. They are designed to call into action, and to combine together, the muscles of the tongue for the discharge of two important functions, as well before the mind could determine their action, as afterwards, when it had power to do so, but was in a manner unconscious of what took place, and also when, under unusual circumstances, it was necessary to add another and a stronger influence, to produce their more powerful and consentaneous action. I can account for their decidedly motor origin in the human being, and for the rounded head whence they spring being in the inferior surface of the chord in the quadruped; for their function is that of motion. I can account for their sensitive ganglion, for it is necessary that there should be a sympathy and common feeling between all the parts concerned in the discharge of a certain function, in order that their action may be suited to the situation and wants of the animal; and I can understand the anastomoses of these nerves with those of the spinal chord, that this sympathy may be more extensive and stronger, and the consent of numerous muscles in the discharge of the appointed function more complete. I have, therefore, no hesitation in denominating it an *organic motor nerve.*

I must here differ a little from him whose track I have gratefully and cheerfully followed. I cannot call this a *respiratory* nerve, for the tongue is more concerned with *deglutition*—one of the processes of digestion, than it is with respiration. I term it an *organic motor nerve*, not in denial of the theory of Sir Charles Bell, but as comprising an extension of the influence of the nerve to other functions of organic life.

The Portion of the Nerve belonging to the Pharynx.—When you observe the meshwork of nerves about the lower part of the face, and the larynx, and the throat gene-

rally, you can scarcely fail to remark how few, comparatively, from the spinal chord are given to the pharynx. There are two branches from the seventh which have considerable similarity to this glosso-pharyngeus, and which I shall in another lecture have to describe, viz., the *chorda tympani*, which, after performing its duty within the ear, takes its course to the tongue, and another branch which may be traced to the styloid muscles, and the dilators of the pharynx generally: the constrictors, however, seem to be comparatively abandoned, and the fibrils which they derive from the fifth, and the seventh, and the upper cervical, render them voluntary muscles to a comparatively insufficient and imperfect degree. The truth of the matter is, that that portion of the mechanism of deglutition with which the pharynx is concerned is performed instinctively, without the command, and in defiance of the resistance of the will. When a portion of food has entered the pharynx, and dilated it to a certain extent, the fibres of the constrictors contract and press it onward whether we will or not. It is an instinctive act, and performed by the foal and the lamb as perfectly as by the adult animal. The pharyngeal branch of the nerve under consideration, is that by which this portion of the act of deglutition is effected. It is to a certain extent, as every vital action should be, independent of the will, and not accompanied by any indications of common sensation; yet the pharyngeal branch, and the muscles to which it is sent, are connected with nerves of voluntary motion, to force their alliance, and obtain their co-operation, under extraordinary circumstances: and also with those of sensation, to preserve a sympathy between the parts, and a consciousness of their healthy or morbid state of action.

I have dwelled the longer on this first of the nerves derived from the lateral column of the spinal chord, for if I have been enabled to give you some idea of its function, we may pass more rapidly over the others.

You will see still stronger reason for venturing to refuse to this nerve the designation of a *respiratory* one, for it is so only in an imperfect and indirect degree, and under unusual circumstances; and is more properly designated an *organic motor nerve*.

The Tenth or Cerebro-visceral Motor Nerve.—This is composed of fibriculi placed in the same line, and still more posteriorly. They unite,—they form or pass through a small ganglion, and they have a sheath distinct from the glosso-pharyngeal, although they escape with it through the same aperture, the foramen lacerum basis cranii. From its strangely wandering path it has been called by some the *par vagum*, and by others the *pneumo-gastric*, from its being principally concerned with the functions of respiration and digestion. We shall see, however, that it has a great deal more to do,—that it is connected with organic life generally,—that it governs or influences every visceral function—that it seems to preside over the motor or mechanical part of the function, and, therefore, as the only visceral nerve derived *directly* from the spinal chord, I have ventured to withhold from it the titles of respiratory or pneumo-gastric, as indicating only a part of its function, and to term it the *cerebro-visceral motor nerve*.

Its Course.—On escaping from the cranium, we find it becoming connected with every neighbouring nerve,—the great organic, the glosso-pharyngeal, the spinal accessory, the seventh, and the upper cervicals, and forming an intricate plexus of nerves, which we can scarcely unravel in dissection, but for which we can account when we consider the importance of the parts at which we are arriving. Having contributed to form this plexus, it enters into the same sheath with the *great organic*, and in company with, and on the outer side of it, and also distinguished from it by its greater size and firmer consistence, and having also the carotid artery on the inner side of the great organic, it pursues its course down the neck.

The Course of the Nerve continued.—I will endeavour rapidly to trace the course of the trunk of this nerve, and its principal ramifications; and here I would again refer you to the accurate delineation of the nervous system by Mr. Percivall; while those of you who are acquainted with the French language will also study with pleasure the equally accurate, although somewhat differently arranged description of M. Girard. I shall have little to say of the comparative anatomy of this nerve in our different patients. The function seems to be clearly the same in all,—the motions of the various parts connected with organic life are the same,—and the only difference in the nerve will consist in the number and distribution of some of its fibriculi.

Anastomosis with the Great Organic.—The first anastomosis is with the great organic before they are united in the same sheath. Some tell us that it helps *to form* the superior cervical ganglion. I am rather disposed to say, that it receives filaments from the great organic: but, at all events, if our surmise should appear to be well founded, that these are the nerves of organic life, the one the *motor*, and the other the *secretory* and the *nutritive* one (as the nerves of the central columns of the chord being those of animal life, and the one the motor the other the sensitive one), we can well

imagine that anastomosis should soon take place between them, and that we should so soon find them in one common sheath, and at length blending together in one grand central plexus.

The Pharyngeal Branch.—This is a very complicated one, and before it is fairly distributed over the pharynx, it has connected itself with the pharyngeal branch of the last nerve, and with a branch likewise from the spinal accessory. The pharynx, although, as I have already stated, comparatively deserted in the distribution of nervous influence from the spinal chord, is richly imbued with organic power, for the act of deglutition is an important and a complicated one: it must be performed, as I have said, long before the mind can influence the action of the body, and it requires the co-operation of many muscles. An attention to what takes place during the act of deglutition, will convince us how difficult it is to arrest the progress of the food when it has once entered the pharynx, and the constrictors are pressing upon it: and, in fact, it is almost impossible to produce the act of deglutition when there is nothing in the pharynx to stimulate the organic nerves to action.

The Œsophageal Branch.—The food having once entered the œsophagus, is delivered over to the influence of the organic nerves; and as the contraction of the fibres of the constrictors of the pharynx forced the food along that canal, so the contraction of the fibres of the œsophagus causes the pellet to descend towards the stomach. The animal has little to do with the force, or even the action of these fibrils. If the pellet is too large, and cannot be driven on by the proper muscles of the œsophagus, even when they are excited to forcible or spasmodic action by the continuance of their natural stimulus, the pressure of the food, no act of the will can avail aught; and mechanical means alone, as the swallowing of some liquid, or the attempted deglutition of air, or, as the last resort, the probang for the human being, and the probang alone in the quadruped, will be effectual in removing the obstruction. In the action of this branch we recognise the organic principle alone.

Arterial Branches.—Next are branches to the carotid, ramifying upon, and winding around it, and forming a complicated plexus, particularly observable in its bifurcation. I will not enter here into the disputed question of the power of the arteries, but I plainly recognise a muscular coat, thin and weak, near the grand central machine, but increasing in thickness and strength as I recede from the heart. It doubtless has its peculiar action, or it would not be found here. What that precise action is, I will not here inquire; but the vessel is indebted for it, be it what it may, to the agency of these nervous branches. No spinal influence can be traced to these vessels, except by the most circuitous anastomosis: it is the organic principle which is here also at work.

The Laryngeal Branch.—The branches to the larynx are very large, and can scarcely fail of being recognised in your dissections. They cross the carotid artery, wind down upon the side of the pharynx, and, in order to reach the larynx, pass through an aperture on each side at the base of the cornu by means of which the hyoid bone articulates with the thyroid cartilage; they then ramify upon those muscles of the larynx, which are concerned in the constriction of the glottis. This branch anastomoses with another derived also from the spino-cerebral, and at which we shall presently arrive, and the fibres of which are principally expended on the dilators.

Course of the Nerve down the Neck.—I now trace the path of the cerebro-visceral down the neck, still in the same sheath with the great organic, and in company with the carotid artery. There are no branches given to the neighbouring parts, for there are none here that are necessary to, or that can be well employed in, the purposes of organic life; but there are almost innumerable filaments of communication between the spino-visceral and the great organic, more closely allying them together, although not identifying them, and preparing them for the completion of the all-important functions which they have soon to discharge. At the bottom of the neck the two nerves separate; and the cerebro-visceral climbs above the carotid artery, and is found between it and the axillary, and, accompanied by them, enters the cavity of the chest between the two first ribs.

The Cerebro-visceral in the Thorax.—The arrangement of the great viscera within the thorax, the inclination of the heart to the left side, and the great bulk of the right lung, give a different direction to the nerve on the opposite sides of the chest. Both are found within the superior mediastinum; but the right nerve continues to follow the trachea; it passes over the root of the right lung, and reaches the under surface of the œsophagus. The left nerve accompanies the anterior aorta, and, crossing the root of the posterior aorta, also reaches the œsophagus; and both of them enter the abdomen attached to the œsophagus. The divisions of this nerve within the thorax deserve close attention.

The Tracheal Plexus.—First there are many branches, united with a still greater number from the sympathetic, entwining round the lower part of the trachea. The

transverse muscle has not yet quite ceased to exist; nor the interposed ligamentous muscular band connecting together the rings of the trachea, while there is beside a new and complicated mechanism of cartilage at the commencement of the bronchial tubes, and also considerable motion or change of situation in this part of the respiratory canal during the inflation and subsidence of the lungs. We may consider this plexus, so far at least as this nerve is concerned, as presiding over and regulating all these motions and changes. Some branches are next given off to the heart, but more of these hereafter.

The Recurrent Nerve.—Somewhat differently originating on the opposite sides of the chest, a branch is next given off from the cerebro-visceral, which takes a retrograde course; it escapes from the chest, and climbs up the neck as far as the larynx. From this singularity of direction it is called *the recurrent nerve*. It gives, at its commencement, fibres both to the pulmonary and carotid plexuses, and to the posterior cervical ganglion of the great organic; and then, as it pursues its singular course up the neck, it sends many filaments to the œsophagus and to the trachea. The first seems to be indebted solely to it for the power of its muscular coat; and the latter owes to it the action of the transverse muscle, whether employed in tightening and smoothing the lining membrane of the trachea, in order to facilitate the passage of the air, or in preserving the arch of the wind-pipe from alteration of form, or from laceration. The power of the ligamento-muscular substance interposed between the rings of the trachea, must also be traced to the same source.

Expending itself on the Larynx.—Having reached the upper part of the trachea, the recurrent nerve terminates in ramifications on the dilator muscles of the larynx, and also on the membrane of the glottis. This is a very important branch; the dilators are the muscles most concerned in the adaptation of the larynx to the inspiration and expiration of air in common or in hurried respiration, and also in the production and management of the voice. They are numerous and powerful, while the closing of the laryngeal aperture is effected by the elasticity of the cartilages, assisted by one small muscle alone.

The Explanation of the Retrograde Course of this Nerve.—We can see, then, some reason why the branch which is to accomplish, or to aid in the accomplishment of, the most important division of these processes, should take this singular course. Being given off from the very base of the trachea, climbing up on each side of it, yielding filaments to it at almost every assignable point from its bronchial divarication to its laryngeal termination, and its ultimate fibres diffused over the larynx, there results a sympathy, a co-operation between every part of the respiratory tube best adapted to produce, and which alone can secure, the perfection of this portion of the respiratory function.

The Effect of the Division of the Laryngeal and Recurrent Branches.—When speaking of the respiratory system, and the mechanism of the voice, I described the effects produced by the division of the laryngeal and recurrent branches.* When the laryngeal branch is divided, the voice is changed and rendered hoarse, for the dilators continue to act, but the power of the constrictors is lost. When, on the other hand, the recurrent branch is cut, the dilators have lost their power, the constrictors alone act, the glottis is closed, the voice lost, and the animal threatened with suffocation. The power of deglutition likewise is materially affected by the division of these nerves; when the recurrent nerve is divided, and the constrictors alone act, the glottis is closed, and the food passes over without danger; when the laryngeal is divided, the constrictors cease to act, the dilators expand the glottis—a portion of the food enters the windpipe, and distressing cough, if not suffocation, ensues.

The Pulmonary Plexuses.—These are very remarkable ramifications of the cerebro-visceral nerve. They are given off on each side, both from the main trunk of the nerve and the recurrent branch, and are divided into two portions; the *superior* one is partly given to the pericardium, and entwines around the pulmonic arteries and veins, and accompanies them into the substance of the lungs; the *inferior* plexus is more attached to the bronchiæ and the bronchial vessels, and can be satisfactorily traced along these tubes and vessels to their termination in the lobuli of the lungs.

Function of these Branches.—There have been contradictory accounts of the consequences of dividing the cerebro-visceral nerve, with reference to the function of respiration. In the generality of cases, and when the nerve has been divided about the middle of the neck, the respiration has almost immediately become quickened and laborious, and the animal has shortly died; post-mortem examination has afterwards shown, that the vessels of the lungs are gorg-

* That lecture (the 18th) was imperfectly drawn up. It was sketched for report under the pressure of severe indisposition, and the revisal of it necessarily committed to those who, however able, could not fully enter into the views of the lecturer.

ed with blood, and the bronchial cells clogged up with a serous or mucous effusion. Although, therefore, I have stated in a former lecture, that the lungs are passive in the double act of respiration, or that their only active power consists in the elasticity of their cellular membrane and air-tubes; that they yield to the pressure of the diaphragm and the ribs in the act of expiration, and, that pressure being removed, the cells and the tubes start again, and resume their previous form and caliber, yet this must be received with some limitation: there is an inherent power in the blood-vessels to hasten the circulation of the blood through them, and also in the bronchial tubes to expel not only the air, but the secretions which they contain. This is derived from the cerebro-visceral nerve, and when the influence of that nerve is removed, the ve-sels remain filled with blood, and the bronchial tubes with serum. In these respects the cerebro-visceral may be considered as a motor nerve.

Different Results of the Division of this Nerve.—There is a very considerable difference, however, in the result of these experiments. When extreme difficulty of breathing has been produced by the division of the nerve, it has been immediately relieved by making an opening into the trachea, showing that a great deal of the disordered function, and perhaps the death of the animal, was produced by the closing of the glottis. The result was also different according to the place in which the divisions was made; if high up in the neck, the effect was striking and satisfactory—if close to the formation of the plexus, the disarrangement of the function was considerably less, and, in some cases, very slight. There is not much difficulty in accounting for this when we consider the frequent anastomoses between the two visceral organic nerves, and the share which the great organic nerve takes in the formation of all those plexuses. If the division is high up, there will be few or no anastomoses, and few or no fibrils of the cerebro-visceral will be brought through the medium of the great organic; if the division is close upon the viscus, the communication through the main trunk may be cut off, but it may be still kept up by means of many anastomosing fibres, through the medium of the great organic. In one instance, the animal lived three days after the division of the nerve, although the division was made in the neck, but there was sadly laborious breathing and frequent vomiting, and at length he died completely exhausted.

The Cardiac Plexus.—The cerebro-visceral nerve furnishes one more considerable, but somewhat mysterious plexus, within the thorax, and that is to the heart. As soon as the nerve on each side has entered the thorax, small branches are directed to the base of the heart, but afterwards, and after the giving off of the pulmonary branches, a very considerable one proceeds from the right nerve towards the heart, and this separating into two as it approaches the base of the heart, is distributed to each auricle, and to the blood-vessels of the two divisions of the heart. Now, Gentlemen, I have very little proof of the agency of this nerve as a motor one as it regards the heart; and comparing the cardiac with the pulmonary plexus, and, by-and-bye, with the gastric one, I find that this organ is sparingly supplied with nervous fibrils, and I cannot help attributing some importance to the circumstance which I have just pointed out to you, that the cardiac plexus is principally made up of ramifications from the *right* nerve alone. I presume not in the present state of veterinary knowledge to explain this; although I can fancy the reason why, viz. that this central and all-important organ is endowed with a contractility of its own, independent of nervous influence, and that the character by which it is distinguished from every other part of the frame, is that of inherent and inexhaustible contractility. Then I can conceive that the influence of this motor nerve shall be little evident, or, in the usual working of the machine, comparatively little felt, yet at all times existing, connecting the motions of the heart, with the changes and the wants of the general system, or the diseases of particular parts, and to such a degree that, in our patients who cannot tell us the situation or the nature of their maladies, the variable character of the pulse, is, although too little studied among us, the most valuable of all the indications of disease. Thus far I can fancy, for I confess, Gentlemen, we have no direct proof, and we are wandering where I seldom dare to venture, on the tempting but dangerous paths of mere theory, that these nerves are here maintaining their character in controlling the action of the heart according to the changing circumstances of health and disease, and even of mental emotion; and when I regard the other supposed power of the cerebro-visceral nerve,—when I look to the sensitive ganglion as well as to the motor origin, I can comprehend a thousand sympathies, and perceive how this central machine is bound up with the system generally, and forms with it one connected whole. In my next lecture we will follow this nerve into the abdomen.

CASE OF

INTUS-SUSCEPTION,

WITHOUT VOMITING, OR CONSTIPATION.

To the Editor of THE LANCET.

THE following case is the first of a series which I have noted down for their deviation from the usual course of disease, and which have occurred in the course of several years' practice in the southern portion of the United States. Medicine has been brought to its present state of advancement by the collection of isolated facts, and every new one, however insignificant, being necessary to the construction of a perfect system of the science, bears with it, in my view, a sufficient apology for presenting it to the notice of the profession. If you concur with me in opinion, I shall be glad to see this case presented to the public through so respectable a means as the pages of THE LANCET.

I am very respectfully, &c.

JOHN GARRIE, M.D.

London, August 20th, 1832.

CASE.

In every medical systematic work, we find it laid down, that vomiting is an early and constant symptom of intus-susception, and that an insuperable constipation is an equally invariable attendant. The occurrence of a case of this disease, in which neither of these symptoms was present, nor any one that, so far as my reading or observation extends, could designate it as volvulus, induces me to present it to the readers of THE LANCET.

On the 3d of October, 1830, Ben, a negro slave, seventeen years of age, of middle stature, athletic frame, and healthy constitution, was attacked by a mild intermittent fever. He was ordered a cathartic of calomel (10 grains) and jalap (20 grains), which operated tolerably freely, and without the occurrence of any unusual circumstance. On the afternoon of the following day he said he was better; but as his tongue was somewhat furred, and his stools had the dark appearance said to indicate bilious derangement, fifteen grains of calomel were administered, and directions left, if they produced no effect on the bowels in four hours, to aid their operation by an ounce of castor oil. Early on the next morning I received a message from his master, desiring me "to return in haste, for he thought Ben was dying." Upon my arrival I found my patient lying on his bed, his breathing a little hurried, his pulse quick and feeble, tongue slightly furred and somewhat reddened, totally unable to swallow, though he could make the usual muscular effort with the pharynx, and his voice sunk into a scarcely audible whisper, and which soon became entirely suppressed. I was informed the calomel and oil had operated four times during the night; the fourth time, a few minutes previous to my arrival, and that he had not complained of pain. Muscular strength was not greatly impaired, for he had got up to stool without assistance, and could change his position in bed. Examining the abdomen, I found it slightly distended, and pressure on the right iliac and umbilical regions excited some evidences of pain. The sensorial functions seemed, from his assent or dissent to the various propositions that were made, for a long time perfect, but together with the other functions of life, gradually declined, and he died at twelve o'clock on the succeeding night, the 5th.

As this was not suspected to be a case of intus-susception, it is unnecessary to detail the few remedial means that were resorted to. It is sufficient to say that enemata were frequently given, and always brought away free dejections.

It may be proper to mention, that during the life of the boy I had attempted, in answer to repeated inquiries on the subject, to account for the anomalous symptoms of his case, by referring them to the presence of worms in the stomach or œsophagus.

Twelve hours after death I opened the body (in the presence of a number of persons) by an incision from the thyroid cartilage to the umbilicus, and thence to each anterior superior spinous process. The view of the abdominal viscera thus presented, exhibited nothing unhealthy in appearance or unnatural in arrangement. After removing the sternum, I opened the stomach, and examined the œsophagus thence to the pharynx; but I found nothing to verify the opinion above expressed. Assured, however, that the cause of his death was to be found, if not in those organs, in some of the abdominal viscera, I undertook to trace the course of the intestines from the stomach to their termination. At about the point at which the ilium and jejunum may be supposed to unite, I found a retrograde intus-susception of about twelve inches in length. The received portion of intestine was easily withdrawn, appeared to be in a highly inflamed state, approaching to gangrene, and to contain some hard particles of food, all which the hurry to bury the body prevented my examining thoroughly.

A mere history of a single anomalous case, without the illustration and explanation it admits, offers little instruction, not simply as to its prevention or cure, but even as to its nature. The physician to whose management a peculiar disease falls, will be

more apt to inquire into, and to reflect upon, the causes of its deviation from the usual course of nature, than the less interested reader of its description, and it becomes his province to make the deductions that it seems to warrant. It is, therefore, trusted, that indulgence will be granted to an attempt to develop the peculiarities of this case, and that the following considerations will not be considered inappropriate.

The circumstances that press themselves upon our attention in this case, are, the intus-susception, the inability to swallow, and the aphonia. These phenomena are rendered of difficult explanation from the presence of muscular motion, and an undisturbed sensation—indicating a freedom from spinal and cerebral disease. Deglutition is a voluntary exercise of muscular motion, and must be considered as dependent, for the volition on the brain, and for the motion, on the spinal marrow. The inability to speak manifestly arose from an interruption, of function of the recurrent nerves, branches of the par vagum—a cerebral nerve.

These facts being indisputable, how are we on physiological principles to account for the extraordinary symptoms of this case? The following appears to me a probable explanation:—

From the extent of the received portion of intestine, there can be no doubt that it drew with it some branches of the great sympathetic nerve, and, perhaps, with the engorged state of the receiving portion, pressed on some of the abdominal plexuses, or even the semilunar ganglia, so as to suspend or destroy their nervous energy. This would constitute a source from which irritation might radiate throughout the whole course of the sympathetic, and extend to all its connexions, consequently involving intimately the par vagum. The recurrent nerves receiving their impressions from the deranged state of their trunk, there is no difficulty in accounting for the suspension of their functions. The cause of the dysphagia is less easily explicable. From the muscles of the pharynx being under the patient's will, it is apparent that the obstacle to swallowing must have been in the lower portion of the œsophagus. It is well known that this part receives its nervous supply chiefly from the eighth pair, and that its contraction takes place without the participation of the will. Reasoning, then, *a posteriori*, it is evident that disease of the grand sympathetic must have been the cause of the dysphagia. The operations excited by the enemata, must be attributed to the large part of the intestines below the intus-susception, maintaining its peristaltic action; while the absence of vomiting was probably owing to the paralysis of the stomach, and the portion above the inversion.

ON LIGATURE
OF THE
COMMON CAROTID ARTERY IN EPILEPSY.

By J. R. Preston, *Esq., Surgeon.**

Michael Cox, pensioner, ætat. 25, sanguineous temperament, and muscular. This man has for the last five years been subject to very severe epileptic fits, recurring generally about once a fortnight. He had lived, generally, temperately. Since the first seizure, the epileptic fits have generally recurred without any assignable exciting cause, but have been also occasionally induced by intemperance. He had been frequently bled during the paroxysms, but had not, by his own account, been subjected to any other mode of treatment. There was, in this case, great cerebral congestion—a feature which I conceived essential to every attack of epilepsy, and by preventing which (an object I believed attainable by tying one or both carotid arteries) I hoped to cure the disease.

The operation was performed on the 4th of February. It took up a considerable time, owing to the quantity of blood that flowed upon the slightest incision, obscuring the parts, as well as from the livid colour the patient's face assumed, and the feeling of extreme giddiness, induced by the recumbent position in which he remained during the operation, which obliged me to raise him repeatedly, as I feared from these symptoms, the recurrence of another attack. I found it necessary, at last, to bleed him largely from the arm, after which no farther cause of delay occurred. He had been bled freely the preceding day, also, in consequence of one of these fits. I divided the sheath as near the larynx as possible, that there might be less chance of wounding the external jugular vein. A small vein that crossed the artery was divided, and there was a considerable flow of blood, which alarmed me greatly for the moment; it soon, however, subsided.

The artery was very little disturbed from its lateral connexions, and was secured with a single ligature; the edges of the wound were brought together, and kept in contact with three sutures, over which strips of adhesive plaster and simple dressing were applied; above these a pad of folded cotton was placed, to keep the skin as much as possible in contact with the parts beneath; and finally a roller.

* From the Trans. of the Calcutta Med. and Phys. Soc, vol. 7.

The patient had taken a dose of salts the day before, which had operated moderately.

On the 4th, 5th, and 6th, there were no constitutional symptoms whatever; there was slight uneasiness in swallowing his spittle, or anything of very small bulk, as it required a greater degree of contraction in the muscles concerned in deglutition.

On the 7th he complained of pain over the left temple; tongue white and dry; skin warm; pulse 72; bowels open freely; the wound was dressed for the second time, and was nearly healed, but there was some swelling and hardness about the cervical glands. He had been drinking the previous night.

Seven leeches were applied to the temples, and he took six drachms of sulphate of magnesia, as a precautionary measure. He was discharged from hospital on the 24th, the wound having been for some time completely healed, except at the single point where the ligature hung out. He attended daily to have it dressed.

The ligature came away on the 5th of March.

April 13. Since the operation was performed, there has been no return of the epileptic attacks, nor any tendency to them. He has experienced also, since that time, a great improvement in his general health and feelings. He has also proved the efficacy of the remedy that has been employed, by very hard drinking, which he and his friends considered a test: it required a large quantity of spirits to make him drunk, and he did not afterwards experience the headache, and gloomy and even horrible feelings, which had previously always followed such an excess. He is now as happy as he was before miserable and wretched.

The following opinions by Dr. Clutterbuck upon the nature of epilepsy, are so much in support of this operation, that I have taken the liberty of quoting them; he considers cases similar to the present, the most unfavourable, and under the ordinary modes of treatment the least likely to be cured.

"Epilepsy (he observes) often makes its attack without any obvious cause, and quite unexpectedly; such are generally the most unfavourable cases in regard to prognosis, as they show a stronger disposition to the disease, so that it is brought on by causes too slight for observation." * * *—Lancet, vol. 12, page 355.

"Upon the whole it may be stated, that the prognosis in epilepsy is unfavourable, few cases comparatively, when confirmed by time, so as to become habitual, being cured by art. The reason is, that in a majority of instances the disease is brought on by causes that cannot be removed."—*Ibid.* p. 358.

"Now you are always to consider epilepsy as a brain affection, and upon this simple ground, that it is merely a disturbance of the function performed by the brain, and by this organ alone."—*Ibid.*

I cannot help expressing a hope that tetanus might be cured by tying both common carotid arteries. In hopeless cases we should, I think, be fully justified in trying such a mode of treatment. I must quote Dr. Clutterbuck again upon this subject.

"Tetanus is necessarily to be considered as a disease of the brain, or cranial portion of the nervous system, though it is possible that it may extend to the spinal chord at the same time. * * Upon the whole you must consider the proximate cause of tetanus to be at least doubtful, but you need not hesitate in referring the disease to the brain as its primary seat."—Lancet.

I beg leave to suggest, as a subject for speculation, what would be the effect of tying the carotid arteries in cases of hydrophobia. The symptoms seem all clearly referable to the brain and nervous system, and have much, if not entirely, the character of undue excitement.

CASES OF

CALCULUS IN THE BLADDER,

Treated by W. B. Costello, *Esq.*

I have refrained from publishing isolated cases of stone in the bladder treated by the new method, from the conviction that the ends of science, and the extension of lithotrity, would be best promoted by exhibiting those cases grouped in such a manner as to enable the medical world to draw general inferences respecting an operation, on the superiority of which over lithotomy, great diversity of opinion still exists amongst sincere and well-informed men. Facts given out singly, and narrated *ad captandum*, may answer very well to attract attention; and this perhaps is as good a way as any for the furtherance of personal interest; but the profession want something more than this; it looks for the elements of conviction and precept, and until facts are so arranged as to answer this purpose, it cannot be satisfied. There is vast variety in the class of calculous diseases; in some (the recent cases particularly) the distress is inconsiderable, and the general health is undisturbed; in others life is wasted by throes of anguish unceasingly recurring, by pains which know no remission; in some the boldest proceedings of the surgeon are crowned with triumphant success; in others the worst results can only be prevented by the most unremitting

care, and the most extreme caution. To speak usefully therefore on this subject, these differences in cases must be kept in view. It is only by observing and noting them faithfully, that we shall be able to form just conclusions on a subject in which humanity is so deeply interested.

The following case exhibits the application of lithotrity in an aged person who laboured under a sluggishness of the bladder, amounting almost to paralysis.

CASE I.

Stone in the Bladder; Paralysis, Catarrh, and enlarged Prostate.—Simple Method of evacuating the Fragments.

Mr. Rochet, formerly a merchant in the city of London, had retired from active life in 1825, being then 75 years old. Up to this period, and for many years previous, he had suffered from the voidance of small calculi, varying from the size of a grain of millet seed to that of a French-bean. The larger ones often were retained for some time in the bladder, but from experience he became so confident of his power of expelling even these, that he always refused the use of any means of facilitating this occurrence, contenting himself with occasional large potations of the mucilage of barley-water. By degrees, however, the power of expulsion became more and more feeble, the bladder more irritable; small stones were no longer voided; the urine, which he could no longer expel entirely, became fetid and mucose, and the movements of the stone were now distinctly felt by him. It is not necessary to enter more into the history of his sufferings. He bore them for three years. Seeing, at length, that he could make no terms with his internal foe, he applied for relief.

Six sittings sufficed for relieving him of a stone of the size of a large walnut. The stone was friable and easily reduced, but he had no power of voiding the fragments. Some of these however were occasionally carried out, by being enveloped in the flakes of mucus which were voided with his urine. To assist him in this difficulty, the following simple expedient was resorted to: the round vesical extremity of a large-sized silver catheter was cut clean off below the eyes; a flexible wax bougie, of greater length than the tube, was then passed into it, the rounded end being made to pass beyond the cut extremity of the catheter, so as to form a head or olive. The catheter thus headed by the bougie was easily introduced into the bladder; the bougie being then withdrawn, and the patient being in the erect position, or stooping forward, the *detritus* was carried through the open tube, at first by the urine contained in the bladder, and subsequently by injections of tepid water, which were made to flow out quickly by the combined effects of the distention produced in the organ, and pressure on the hypogastrium. The patient was thus delivered of the last particle of the stone.

The paralysis of the bladder still persisted; the catarrh, though lessened, was still distressing, and the prostate was considerably enlarged. To meet these symptoms, the following treatment was adopted: Cold irrigations of the bladder, rendered in the lapse of a little time more stimulant, together with dry friction on the sacrum and insides of the thighs, were first put in use. The catheter used for the irrigations was of considerable size, chosen with the view of making pressure on the prostate; the rectum, which had sympathised with the bladder while it contained the stone, became tranquil; the bowels were regulated, and exercise in the open air was recommended. Under this treatment the bladder recovered its tone, the catarrh disappeared, and the engorgement of the prostate diminished considerably. On a former occasion I dwelt on the resolution of simple engorgements of the prostate; ample experience has since confirmed the opinions I then maintained on this point. I speak of engorgement of the gland, and not of its bony, fibrous, or other alterations. This gentleman is now an octogenarian in perfect health.

CASE II.

Case of Stone in which Cutting ought never to be resorted to.

On my passage through Liverpool, about two years ago, Mr. Bickersteth confided to me a patient of his who had laboured for a considerable time under symptoms of stone in the bladder. Having ascertained by catheterism that the fact was so, the next day was fixed for the operation. On this occasion several of the most eminent medical men of the town were present, amongst whom were Drs. Trail, Formby, Brandreth, Rutter, Mr. Sheppard, Mr. Battey, Mr. Timewell, &c.

Mr. Pix, the patient, aged sixty-nine years, placed himself on a sofa; the orifice of the urethra, being unusually narrow, was opened by means of the urethratomi. He did not seem to be conscious that this small incision was made. The difference in point of sensibility between the surface of the glans penis and the commencement of the urinary passage is remarkable, and well shown in every case where it becomes necessary to make this incision. The lithotrite was now introduced, and a calculus of the size of a pigeon's egg seized. It was reduced by drilling and crushing. A bath

was ordered after the operation. On my return I saw this patient again. He had voided the whole of the calculus, together with portions of several others. These portions did not bear any marks of the action of the drill. They appeared to be fragments of calculi, which had been formed of concentric layers. There was no layer whole, and their surfaces, except that which formed the surface of the stone itself, seemed to be coated with a crust of dried crisp or varnish. I saw similar fragments of calculi which had been removed by cutting by my friend Mr. S. Smith, of Leeds. At Glasgow, also, Mr. Buchanan showed me half of a bean-shaped stone which had become engaged in the membranous part of the urethra, from which he cut it out. In neither case had any violence been used capable of fragmenting the stone. I am inclined to think that this disruption of the stone is spontaneous, and depends in all probability on the fermentable nature of the dried viscid substance which lines and insinuates itself into the substance of the layers. At my second visit Mr. Pix felt relieved from his pains; if they should at any time be renewed, he assured me he would repair to me. Very lately, I had news of this patient, in a letter from Dr. Dobbie of Liverpool. The Doctor expresses himself in the following words:—"About a month ago, I gave advice to an old gentleman, who had been operated upon by you in Liverpool. The operation was so far successful, that he passed the fragments of the stone you reduced; but the kidneys go on to form others, and he has collected about twenty-five small calculi, that have passed from the kidney and along the urethra. There are some calculi now in the bladder, and he passes occasionally a small stone, without pain, or with little pain; indeed, to use the words of Dr. Trail, whom he consulted, *his kidneys and bladder form a complete quarry*; and I doubt from his age and infirm state, even if those in the bladder were removed, which you could easily do, whether his disposition to form new ones could be corrected."

Here, then, is a case in which relief from long suffering was obtained by one application of the lithotrite, of a few minutes' duration, and at the expense of very little pain. The same benefit might now be conferred on him, but the occasion for it is far from being so urgent. In cases where the kidneys have so strong a lithic disposition as to be constantly making stone, the cutting operation ought never to be performed. It can only do at a great risk of life, what lithotrity can accomplish with little of either risk or pain. Neither of them can do more than remove the calculi which happen to be in the bladder at the time. The source from which they come, is not exhausted. Here then is one form of the calculous affection in which the cutting operation must be proscribed.

7, Parliament-street, Westminster,
August 20th, 1832.

CASE OF

MALIGNANT CHOLERA,

By W. Dobson, *Esq., Surgeon, Pimlico.*

Mrs. Tyley, ætat. 36, residing in Harrison Street, Vauxhall Road, a strong, healthy, and temperate woman, in comfortable circumstances, not subject to disordered bowels, was attacked on the 1st of August about an hour after a dinner of beans and bacon, with griping of the bowels, diarrhœa, and nausea, but not vomiting. These symptoms continued progressively increasing until the following morning at five o'clock, when spasms of the legs and abdominal muscles supervened, of the most excruciating kind, with coldness of the surface, first commencing in the extremities, then extending over the trunk. I saw the patient at seven a.m., she was prostrate in bed, and unable to move her hands, the debility was so extreme. The countenance was sunken, and the face of a purple hue; the eyes sunk in their orbits, and had a glazy appearance; the fingers were remarkably shrivelled, and of a dark colour; the surface uniformly cold, "as cold as marble," with the exception of the præcordial region. The cramps had ceased. A gruelly-like fluid of a light colour was passing from the bowels involuntarily; the radial arteries were imperceptible, and the beat of the carotids exceedingly feeble; the tongue cold; the voice had the character so peculiar to cholera.

Every symptom indicated that dissolution was at hand, and would occur unless prompt and energetic measures were adopted. Heat was applied to the surface, and the whole body rubbed constantly with warm turpentine. Large quantities of brandy were given, and *calomel* ℈j with *opium* gr. ij every half hour.

Nine a.m. Some warmth on the surface; cramps had recurred slightly; vomited once; pulse at the wrist just perceptible; bowels still much relaxed. An enema was administered, composed of two ounces of lukewarm starch-gruel and *tinct. opii* ℥ss. The breathing being laborious, nitric acid was freely applied to the cervical portion of the spine; the respiration was instantly excited. The *cal. et opii* to be given every hour.

At eleven still improving; less discolor-

ation of the skin; debility intense. *Sp. ammon. arom.* was given frequently.

The patient was seen every two hours during the day, and a gradual amendment was observable each time.

At ten p.m. Pulse 80 and small; surface much warmer; complains of irritation of the skin from the turpentine; *cal.* gr. x with *opii* gr. j every three hours; farinaceous substances, with small quantities of brandy, to be taken frequently during the night.

3. In a favourable state; pulse much improved; slight ptyalism; surface warm; thirst, with dry tongue; bowels relaxed; evacuations bilious; powders to be omitted. Ordered a cretaceous mixture.

4. Mouth fully affected with the mercury; great debility; quinine and port wine every four hours. Avoiding too much excitement.

5. Decidedly better. 6. Nearly convalescent. 8. Recovered, with the exception of soreness of the mouth.

MALIGNANT CHOLERA.

SANITARY REGULATIONS

ISSUED BY THE

GOVERNMENT BOARD OF HEALTH,

In August, 1832.

(Circular.)—The Central Board of Health have deemed it advisable to reissue the sanitary circulars relating to spasmodic cholera, dated respectively 14th November, 13th December 1831, and 9th May 1832, with the following alterations and additions, which in their opinion have been rendered necessary by the presence and gradual spread of the disease in this country since October last.

Council-office, Whitehall,
Aug. 9th, 1832.

PUBLIC PRECAUTIONARY MEASURES.

1. In order to ensure the adoption and realize the benefit of any system of sanitary arrangements in a large community, the first essential point is to divide that community into subordinate sections, and to form local Boards of Health; each board to consist, if possible, of one or more resident magistrates and clergymen, and parish authorities, a certain number of substantial householders, of one or more medical men, and an efficient secretary.*

2. These Boards should appoint district inspectors to visit daily, and report upon such deficiencies as may be found to exist in the following primary elements of public health; viz. the food, clothing, and bedding of the poor, the ventilation of their dwellings, space, means of cleanliness, their habits as to temperance,—prevention of panic.

3. It would be most desirable that flannel clothing, at least flannel belts and woollen stockings, should be distributed, and an improved diet afforded, to those who may be found most in need of such supplies, and who are generally the first attacked in all communities; in order that they may the better resist infection, and be enabled to oppose improved strength and more comfortable feelings to the influence of the disease, should they be attacked.

4. The subordinate divisions of districts ought to be numbered or lettered, and the names of the medical men attached to, and the visiting inspectors employed in, each division and district, should be placarded in conspicuous places.

5. Efficient arrangements should be made by the local Boards of Health or other authorities to obtain the earliest and most correct intelligence of every case of cholera which may occur within their jurisdiction, and to report the same to the Central Board in London.

6. All unnecessary communication should be avoided as far as possible between the infected and the healthy; and as space, cleanliness, and pure air, are of the most vital consequence, both to the recovery of the sick person and to the safety of those about him, the patient labouring under spasmodic cholera should either be placed in a separate, well-ventilated apartment of his own house, if it afford such accommodation, and be attended by as few persons as the circumstances of his case will admit, or be induced to consent to an immediate removal to the temporary hospital; or the healthy members of the family should be removed to such building as may have been provided for the reception of persons whose circumstances will not afford the advantages at home, of space, air, and separation from the sick.

7. But the Central Board strongly deprecates all measures of coercion, which, when tried upon the continent, have invariably been productive of evil. The best inducements to a prompt acknowledgment of the disease having entered a family, as well as to an early and voluntary separation of the

* When a community supporting its own poor wishes to establish a Board of Health, a public meeting of the rate-payers must be called to nominate the members, a list of whom must be transmitted to this office, under cover, "To the Clerk of the Council," for the purpose of being endowed with the necessary powers by an order of the lords of the council.

sick from the healthy, will always be found in the readiness and efficiency with which public charitable institutions attend to the objects noticed in par. 2. (See p. 655.)

8. It is with much satisfaction that the Board feel themselves authorised to declare, and it will no doubt be highly consolatory to the public to learn, that under proper observances of cleanliness and ventilation, this disease seldom spreads in families, and rarely passes to those about the sick, under such favourable circumstances, unless they happen to be particularly predisposed by intemperance, great exhaustion from fatigue or mental anxiety; indisposition of any kind, more especially bowel complaints.

9. When the circumstances of any population render it probable that a temporary cholera hospital will soon be required, such accommodation upon a limited scale should be prepared at once, lest the want of it should add to the panic, which the first cases, when they actually occur, are but too apt to produce.

10. The situations which the board would recommend for temporary cholera hospitals would be, those most detached, insulated, and thoroughly exposed to free and open air; the description of a house, such as would admit of the most perfect ventilation and cleanliness, and the largest space around the sick.

11. When an individual shall have been attacked with this disease, and placed under the most favourable conditions, as already pointed out, both for the recovery of his own and the safety of the public health;—the room or apartment where he may have been attacked, and from which he may have been removed, should be purified by scrubbing, lime-washing, free ventilation, and fumigation by heated sulphuric acid and common salt, with black oxyde of manganese, or the same acid with nitre; or, when these materials cannot be obtained, by strong vinegar thrown upon heated bricks. The bed, bedding, and clothes, should be immersed in water and washed with soap.

12. To correct all offensive smells, chloride of lime may be applied; but great caution is recommended in the use of this material, its fumes, continued for any length of time, having been found highly prejudicial to health, more particularly in delicate persons.

13. A few steady men, proportionate to the extent of the district in which they are to act, should be appointed to lime-wash and purify, as above recommended (under the direction of medical authority), such apartments as may be pointed out by the inspectors of the local board.

14. Those who die of this disease, should be buried within twenty-four hours, wrapped in cere cloth, or in a sheet or blanket saturated with pitch or coal tar, and be attended to the grave by as few persons as possible.

INDIVIDUAL PRECAUTIONS.

15. *Diet.*—No sudden nor extensive alterations should be made in the usual modes of living. All changes of food, to be useful, indeed, not to be absolutely prejudicial, should tend to render it drier, more nutritive and concentrated. Moderately costive bowels, the almost invariable consequence of a regular, invigorating diet, will be found more conducive to exemption from cholera than an opposite habit, everything tending to relax the bowels unduly, being apt to induce a predisposition to the disease.

16. Avoid, above all things, overloading the stomach. Indigestion, however produced, disposes the body to cholera. If in easy circumstances, take for dinner a moderate quantity of roast meat in preference to boiled, with stale bread or good potato, two glasses of wine with water, or an equivalent of good spirits and water, or of sound porter or ale. Eat garden-stuff and fruit sparingly, and avoid fat luscious meats. In short, whilst under apprehension of cholera, use a dry, nutritive diet, sparing rather than abundant, observe great caution as to eating suppers, for cholera most frequently attacks about midnight, or very early in the morning.

17. Temperance should be most rigidly observed in everything. In short, no means should be neglected which may tend to preserve individual health, for although the neglect of any or all of these cautions would not of itself produce the specific disease called spasmodic cholera, yet such neglect would most assuredly dispose an individual living in an infected atmosphere to be attacked by that disease, who most probably might otherwise have escaped.

18. *Exercise.*—Moderate exercise in the open air, in fine weather, is conducive to health; but the greatest care should be observed by all, more especially by the weakly and the aged, not to carry that exercise to fatigue or profuse perspiration, nor to sit down with wet feet or wet clothes. Indeed the most particular attention should be paid to keeping the feet dry and warm.

19. Whenever aperients may become indispensable, those of a warm aromatic kind in moderate doses, should alone be resorted to, such as two of the pills No. 1, or a teaspoonful of the powder No. 4, taken over night, followed in the morning by the aperent draught No. 7. What is generally understood by salts—viz. Glauber's salts and Epsom salts, as well as other cold purgatives, should not be taken on any account, without the express prescription of

a medical man, when cholera is prevailing at the time.

20. The medical members of the board beg to state, that no specific preventive against cholera is known to exist, and that the drugs hitherto offered with this pretension, in places where the greatest ravages have been caused by this disease, not only did not possess the negative virtue of doing no harm, but were found to be absolutely injurious. The true preventives are, a healthy body, and a cheerful, unruffled mind; but habitual drugging, at all times improper, is to be deprecated in the strongest terms when epidemic disease is present or apprehended.

TREATMENT.

21. No remedy at all approaching the nature of a specific has been as yet discovered for this disease in its more aggravated form. In fact, no one mode of cure can be usefully employed under all the circumstances of any disease. The symptoms, and grades of intensity with which spasmodic cholera makes its attacks, vary with the conditions of the subject; its treatment, therefore, must vary with these grades and conditions.

22. The leading premonitory symptoms are, spontaneous looseness of the bowels, with or without griping pains; flatulence, and distention of the abdomen, or slight spasms of the extremities, apoplectic vertigo, with nausea, lassitude, weakness, or various combinations of these symptoms.

23. *When cholera is prevailing, looseness of bowels, however slight, should on no account be neglected. It is by far the most usual forerunner of the disease, as well as the most important, because, in its various degrees, it constitutes that stage in which life may be most easily saved.* When this premonitory symptom affords time for distinct treatment, it may be checked, if mild, by the draught No. 8, to be repeated every second or third hour, if necessary, for three or four times.

24. But if the purging be severe, a moderate bleeding of ten or twelve ounces, or cupping, or leeches, if there be local pain, should be resorted to, and one of the powders No. 3 should be given forthwith, to be washed down with the draught No. 6. This dose to be repeated every second hour for three or four times, if necessary; the patient being *strictly confined to bed*, with a view to perspiration.

25. A warm-bath for half an hour, followed by rubbing with flannel or flesh brushes; warm fomentations to the belly by means of bladders half filled with hot water, or flannels soaked in hot spiced wine, or in hot spirit and water, will afford much relief.

26. After the diarrhœa shall have been fairly arrested, say for twelve hours, a tablespoonful of castor oil, with ten drops of laudanum, should be given, in an ounce of peppermint or cinnamon water,* or the pills No. 1 over night, to be repeated in the morning, if necessary, with the draught No. 7.

27. When there are cramps, a dessert-spoonful or two of the liniment No. 10 should be assiduously rubbed on the part affected.

28. If there be nausea or sickness, without acute pain at the pit of the stomach, give an emetic of twenty-five or thirty grains of ipecacuanha in half a pint of warm water.

29. When giddiness and pain at the pit of the stomach are present, bleed as above, and give a teaspoonful of the aperient powder No. 4.

30. Let the diet during all these premonitory symptoms consist of light farinaceous preparations—sago, tapioca, panada; chicken broth and tepid drinks to promote perspiration.

FIRST STAGE OF THE ATTACK.

Treatment.

31. When the motions have lost the appearance of feculent matter, and have put on that of rice-water or gruel, with vomiting of similar liquids, spasms, intense thirst, irregular, slow, and weak pulse, give an emetic of half a pint of a solution of common salt, milk-warm, and as strong as it can be made, with a teaspoonful of mustard powder. Place a mustard plaster, No. 11, or apply the hot turpentine fomentation, No. 12, over the whole stomach, belly, and front of the short ribs. Give one of the pills No 2 every alternate half hour, and in the intervals one tablespoonful of the mixture No. 9. Let the patient drink cold water or iced water if it can be had, allowing no more than two or three tablespoonfuls at a time, or bits of ice the size of a nut may be swallowed whole, to allay the burning sensation at the pit of the stomach. Let bags or stockings filled with heated bran or sand, or bladders half full of warm water, be placed along the patient's spine or sides, and to his feet. Let him be kept still, if possible, wrapt in warm blankets, but not oppressed with heat or coverings, particularly over the chest and neck.

SECOND STAGE OF THE ATTACK.

32. If, notwithstanding these measures, the patient should appear to be sinking, the pulse becoming weaker, the skin colder,

* A dose of peppermint or cinnamon water, may be made by rubbing down three or four drops of the essential oil, with half a teaspoonful of sugar, adding two tablespoonfuls of water by degrees.

the breathing more laborious, the individual appearing less anxious about his own situation, then, in addition to the steady application of the measures already recommended, let an injection be administered, consisting of two or three pints of water, as warm as the hand can conveniently bear, with the addition of a wine-glassful of spirits, to be repeated, if thought necessary, at intervals of an hour.

THIRD STAGE.

33. When the pulse at the wrist has ceased, or become almost imperceptible, with coldness of the extremities, and perhaps blueness of the surface, particularly of the lips, hands, and feet; irregular breathing, loss of voice, suppression of urine, ghastly countenance: although under these distressing appearances there is but little room for hope, our exertions should not cease.

34. At this stage of the attack the vomiting and purging will generally have ceased, or at least be much diminished; the belly will be drawn in, and pain, sinking, and death-like oppression, will be felt about the heart.

35. Let the hot-water injection be repeated, with three or four drachms of the tincture of assafœtida, and retained for some minutes by means of a napkin.

36. Let mustard plasters be applied to the inside of the thighs and calves of the legs, in addition to that on the belly, which may be removed to the sides of the chest or back; let the limbs be diligently rubbed with warm cloths; let small quantities of light cordials be given at intervals, such as a teaspoonful of compound tincture of cinnamon, or of aromatic spirit of ammonia, in a teaspoonful of water, and let the treatment ordered for the second stage be continued until the pulse becomes distinctly perceptible at the wrist.

STAGE OF RE-ACTION OR FEVER.

37. When the pulse has begun to rise, and the heat and natural colour to return to the surface, keep the patient perfectly quiet, but let him be carefully watched, for a sudden sinking of the powers of life not unfrequently occurs at this period of the disease. Opiates of all kinds must now be withheld; and wine, brandy, and other stimulants, used very sparingly, and withdrawn altogether as soon as the pulse and heat are steadily re-established; when mild tepid drinks are to be substituted, and the powder No. 5 given every hour, instead of the medicines hitherto used, should the bowels be torpid.

38. Under this treatment a warm copious sweat often breaks out, or a more healthy discharge takes place from the bowels, or some urine is passed, which of all others is the most favourable sign. When such is the case, the patient, with proper care, will often pass into a state of convalescence, without further difficulty or danger.

39. It often happens, however, notwithstanding all our care, that the re-establishment of the pulse and heat are closely followed by symptoms of fever, by some degree of stupor, by great oppression of breathing, by distention and tenderness of the belly, all of which indicate danger.

40. The moment such symptoms appear, bleed from the arm, or from the part most affected, by leeches or cupping, to 10, 12, or 16 ounces, according to the effect produced by the bleeding. Reduce the temperature of the patient's room, give cool drinks, and apply cold wet cloths or pounded ice in bladders to the head, and give the powders No. 5 as already ordered.

41. When convalescence has begun, observe the strictest care as to diet. At this period a full meal has in numerous instances brought on a relapse. Indeed animal food, even in a small quantity, under these critical circumstances, has often been attended with dangerous consequences to those just recovering from cholera. To such, even the mildest articles of food should be given in much smaller quantities, and at shorter intervals than to those in health; and their ordinary diet and habits should be very cautiously resumed.

W. Pym, Chairman.

Pills No. 1.—Each to contain

Blue pill, Toasted rhubarb, } of each, 2½ grains.
Oil of aniseseeds, 1 drop.

Pills No. 2.

Calomel, 2 grains.
Opium, ⅛ grain.
Camphor, 1½ grain.
Capsicum, 1½ grain in each pill.

Powder No. 3.

Compound powder of kino, 15 grains; or compound powder of ipecacuanha, 10 grs.

Aperient Powder No. 4.

Calcined magnesia, Rhubarb in powder, } each 2 drachms.
Ginger in ditto, 1 drachm.
A teaspoonful for a dose.

Powder No. 5.

Calomel, 1 grain.
James's powder, 2 grains.
Nitre in powder, 3 grains.
The whole for one dose.

Draught No. 6.

Chalk julep, 5 drachms.
Compound tincture of cardamoms, } each 1½ drachm.
Mindererus spirit, }
Ipecacuanha wine, 30 drops.
Oil of aniseseed, 3 drops.

Draught No. 7.

Tinct. of rhubarb and aloes, } of each 3 or 4
Infusion of cloves, } drachms.

Draught No. 8.

Chalk julep, 6 drachms.
Tincture of catechu, 1 drachm.
Tincture of opium, 25 drops.
Oil of peppermint, 3 drops, first rubbed down with two drachms of sugar.

Mixture No. 9.

Mindererus spirit, 2 ounces.
Mint water, 2 ounces.
Carbonate of ammonia, 1 drachm.
Syrup of ginger, 3 drachms.
Sweet spirit of nitre, 3 drachms.
One tablespoonful for a dose.

Liniment No. 10.

Comp. soap liniment with opium, 8 drachms.
Tincture of cantharides, 2 drachms.

Mustard Plaster No. 11.

Two tablespoonfuls of flour of mustard, with a dessertspoonful of common salt, mixed with water into a thin paste, to be spread upon brown paper, and applied to the part until redness, heat, and soreness are produced.

Turpentine Fomentation No. 12.

A piece of flannel, large enough when doubled into three folds to cover the whole front of the abdomen, tightly wrung out of very hot water, and immediately soaked in spirit of turpentine, to be placed on the belly, and covered with a piece of dry flannel to prevent evaporation; to be left on until a burning sensation is felt.

LITHOTOMY

BY A NATIVE OF INDIA.

The following memorandum relative to a native lithotomist, is drawn up by G. King, Esq., surgeon, Patna, and appears in the last volume of the *Calcutta Medical Transactions*, just published. "At Poonarai, a village, three coss from Patna, resides an Hujam, of the name of Chukkun; who says that he has performed the operation of lithotomy on thirty-five persons, one only of whom died: in that case the stone was of very large size, and broke into several pieces; the patient died on the third day after the operation. He shows twenty calculi, some of which are of considerable bulk. The instrument he uses, is something like a clumsy-made penknife, and he describes his mode of operating as follows:—The patient being put in a convenient posture and held firmly by several persons; an assistant presses the lower part of the abdomen, in the direction of the pelvis. The operator introduces his fore and middle fingers into the rectum, and crooking them so as to obtain a hold of the stone, he brings it towards the perinæum, till it becomes prominent there. He then makes an incision over the stone, (on one side of the rapha, and about an inch from the anus,) and extracts it. The urine passes through the wound for some days; and the cure is generally completed in from twelve to twenty days. Chukkun acquired his art from his father, and has now taught his son to perform the operation. As this man keeps no register of the cases, his statement may be liable to errors, respecting the number of persons on whom he has operated; and probably a liberal deduction should be made from his account of success, which it is of course his interest to magnify. In fact, it is almost an invariable custom with native operators, to assert that their operations are attended with certain success; and that cures in their hands are infallible. At the same time we must acknowledge, that they evince much cunning and dexterity in assigning reasons for not operating on unfavourable cases. They operate with a view to *cure*, and would not hazard their reputation for the prospect of alleviating continued suffering, when they did not expect ultimate recovery." The subjoined note is added by R. Frith, Esq. "The patient in this case was a native boy, 14 years of age, who had been suffering from symptoms of stone in the bladder. The old operation '*by the gripe*' was performed. The patient's belly was first rubbed with oil, and then the stone was brought down by pressure over the pubis; and being secured by two fingers introduced into the rectum, by which it was drawn strongly against the perinæum, an incision was there made over the stone, with an instrument resembling a small razor, and the stone was extracted without the use of any forceps. No fever followed, nor were there any unfavourable symptoms, and the wound was completely healed in twenty days."

THE LANCET.

London, Saturday, August 25th, 1832.

STIMULATED to exertion by the rapid and alarming spread of the cholera in the distant parts of the country, the members of the Central or Government Board of Health have considered it judicious to issue another circular explanatory of the salutary measures which should be resorted to, in order to protect the community from the terrible ravages of this alarming disease. The document itself will be found in this day's LANCET, and we give it entire, in order that benevolent individuals residing in distant parts of the kingdom may reprint and distribute, either the whole, or such portions of it as they may consider best calculated to effect the preservation of the public health.

Having examined it, however, with considerable attention, we may confidently state that its contents have been carefully and judiciously selected; that no part of it is irrelevant to the object held in view; and that the whole is entitled to the most serious consideration which can be bestowed on it by medical practitioners and parochial authorities. The defects, if any, are those of omission rather than of commission, and the chief of these is to be found in the absence of a strong recommendation to the public to resort, in cases of attacks of malignant or spasmodic cholera, to medical gentlemen residing in the vicinage of the patients.

The members of the Central Board of Health ought to know, that when the symptoms of a frightful and mortal disease have made their appearance in the rooms of a quiet dwelling, fortitude forsakes her seat, and judgment her habitual occupation. Alarm for the safety of fathers or mothers, sisters or brothers, seizes the mind, and all becomes bewilderment and confusion. Experience having amply warned this official body of such a disastrous result, we are surprised that they did not hold out to the public the policy, nay, the necessity, of resorting instantly to medical aid. Considering the facility with which this malady disposes of its victims, it is not only excusable and justifiable, but even commendable, to publish such precautionary notices as are to be found in the circular before us, and we are far from reprehending the motive for publishing the prescriptions at the close of the document. Nevertheless, the ages and temperaments of patients are so various, their habits of life are so opposite, their opulence and poverty so extreme, the states of firmness and dread so pointedly different, the pathological conditions frequently so anomalous, that nothing can be more unfortunate, at least in conformity with our view of the subject, than that patients should be subjected to domestic treatment, if in any instance medical aid is at all attainable. Let it not be supposed that we condemn the adoption of those precautionary sanitary measures which are recommended in the circular. Nor should it be inferred that we object to the adoption of the domestic remedies prescribed with a view to check the progress of the premonitory symptoms of the malady. But what we particularly wish to enforce is this, that in every instance of an attack of decided spasmodic cholera, in addition to resorting to the measures prescribed by the Central Board of Health, medical skill should be resorted to as the only rock to which the unhappy patient can cling with any hope of temporary redemption or permanent security.

WHEN the project for founding the London University was first promulgated, the BATS were sorely alarmed at hearing that a "medical department" was included in the scheme. Accustomed to intrigue, habituated in defeating the dictates of hu-

manity, skilled in the art of obstructing the noblest of the sciences, they lost not a moment in directing the machinery of their unholy offices to the furtherance of their immediately-conceived dark designs. "A medical department in the London University!" exclaimed they. "What, then, is to become of the recognised schools, and of our own dear hospitals? We will crush this infant monster on its first appearance. Its primitive shall be its final breath." Warned by the prospect of a triumph in injustice, and looking forward with delight to an anticipated increase of gains, the merciless Bats applied to their brothers, fathers, and uncles, in the notorious college in Lincoln's Inn Fields, where, the subject of Battish grievances having been discussed, it was resolved, that no student should be admitted to an examination for the diploma of the college, unless he produced a certificate of having attended a London hospital for a period of not less than one year, or a provincial recognised hospital for a period of not less than four years. "Here," exclaimed the conspirators, "is at once a shield of protection to ourselves, and an instrument of decided defeat to our opponents,"—that is, to those individuals who would throw down the gates of monopoly, and lay open the fields of science to all unworthy, but nicknamed "deserving," intruders. On one of the junior members of the gang inquiring how such a regulation could work so gloriously for the cause of battism, it was replied by one of the seniors in crime, that as the London University was without a hospital, the regulation would bring nearly the whole of the medical students to those schools in which hospitals formed portions of the establishments.

Experience has verified the truth of this malicious prediction. Considering the facilities and excellence of the instruction, the convenience, comfort, and even elegance of accommodation at the medical department of the London University, as compared with the old recognised schools, we are compelled to admit that the former has not embraced so large a number of medical pupils, as there were well-founded reasons for expecting; and can it be disputed that the foregoing regulation of the College of Surgeons was the barrier which successfully opposed the ingress of students? In point of fact, we have stated this restriction in too favourable a light for the College, as the official order required not only a four years' attendance upon a provincial recognised hospital, but an attendance of six months, in addition, at one of the favoured London hospitals,—thus affecting to balance the value of forty-eight months' experience derived from the hospital of a populous town in the country, by opposing to it a certified attendance of only six months duration in one of their own establishments of the metropolis. If the head became dizzy and the heart sickened, while reflecting on this profligate, abandoned, and shameless scheme propounded by corporate monopoly, still, a recovery of the senses indicated to the student, that as compliance was a legal duty, so would resistance be his professional ruin. Instead, therefore, of resorting to the medical department of the London University, those students who were not acquainted with the merits of the private schools, were compelled to proceed, with reluctant steps, to the recognised schools of the old hospitals, knowing that if they attended there during the delivery of the prescribed courses of lectures, they could claim their examination at the College, by producing a certificate of twelve months' attendance at the hospital immediately connected with the establishment.

Is it not extraordinary that the London University, with such a barricade before its door, has made any progress whatever towards success in its medical department? Is it not surprising that students have been found possessing sufficient intelligence and courage to stem the torrent of

abuse which was directed against them? Fortunately for the cause of medical science, the new institution started at once into life, in the full vigour of maturity, and has acquired no other aid to sustain it in its brilliant career, than the talents and industry of its professors, and the honest support of an independent medical press.

Every man in the profession who knew anything of the regulations in the school, saw at once that this by-law of the College of Surgeons was a deed of proscription issued against the medical department of the London University. For how could it be supposed that any number of students could be found who had attended, or who could attend, during *four years*, the surgical practice of a provincial hospital? Added to this monstrous stipulation, was the injunction that there should be a six months' additional attendance on the surgical practice of a London hospital, the University having been at the same time deprived of the advantages of such an eleemosynary establishment.

Strongly evident as was the tendency of the College of Surgeons' regulation, yet the Council of the London University appeared to slumber while the yoke of monopoly was fastening upon their necks. They resorted to no measure to avert the threatened evil, and remained silent while the self-elected junto proclaimed throughout the British dominions that the medical department of the London University should contain only just such a number of students as they might permit to enter the theatres of the institution. Experience is always the best monitor in instances of this description. The Council were warned of the dangers by which they were beset, but they turned a deaf ear to the voice of admonition. At length, stimulated by the insult that had been offered to them, and by the partial defeat of one of the main objects with which the University had been founded—namely, the prosperity of a medical school—they resolved some months ago on appropriating a portion of the funds at their command to the erection and support of a hospital. Delighted beyond expression at this resolve of the Council, the medical students throughout England, despising, as must their young and generous hearts, the system of extortion which has been so long in vogue in the old recognised caves of the Bats, look forward with the utmost anxiety to the opening of this University Hospital; a procedure which both they and we regard as nearly allied to the completion of the medical department in the University of London. The anxiety felt on this subject is very great, and the communications which we receive respecting it are extremely numerous. The Council, however, ought to know that the new hospital is regarded by all as *a cure for the extortion practised at the old "recognised" institutions*, and that it is anticipated by the liberal portion of the public that it will be placed on the footing of the hospitals in Paris, and rendered free to students, only such a sum being demanded as the fee of admission as shall be absolutely essential to the present maintenance of the patients; that demand also ceasing when the funds of the charity have accumulated to an extent which may render them sufficient for all the imperative purposes of the institution.

Observations on the Healthy and Diseased Properties of the Blood. By William Stevens, M. D. London: Murray, 1832. 8vo. pp. 504.

Sur le Sang Humain, &c. &c. Par Prosper Sylvain Denis. Paris, 1829. 8vo. pp. 450.

Journal de Pharmacie (Septembre et Octobre 1831) *Essais Diverses.* Par M. L. R. Lecanu.

The spirit of pure theory has been as powerful a narcotic to the science of medicine, as the spirit of barleycorn has been to the physical constitution of man. Under the intoxicating influence of theories, the

rapeutic knowledge has been diverted from the straightforward path which it is her duty to follow, and sent abroad, reeling, like a drunkard, through the sloughs and quagmires of error. Mishaps the most ludicrous, and stumbles the most indecent, have in consequence been made by her during her erratic and unseemly deviations, tempted, as she has been, out of the narrow way, by every will-o'the-wisp that crossed her footsteps, and it is only by the loud laughter of the surrounding multitude that she has at length been aroused, rendered conscious of her error, and has returned into the high road from which she had wandered. Let our readers mark the application of the allegory as we proceed.

The works now before us are as different in kind and conformation as could be imagined in volumes professing to treat of the same subject. In the second and last, we find the authors recording the results of almost innumerable experiments on the vital fluid, describing the experimental means by which these results were obtained, and stating the bearings of these facts upon pathology, physiology, and therapeutics, with a degree of exactitude, and a precision of reasoning, that admit of no controversy of their opinions. With them everything is made subservient to the grand object of ascertaining positive facts, and of making correct and ligitimate inferences therefrom. They strain nothing, warp nothing, to suit their own hypotheses, but toil with might and main at the accumulation of facts, and proceed in this labour with so subdued and modest a tone, that their exertions almost escape attention.

The character of Dr. Stevens' volume is, we have said, of a different kind. We do not mean, however, to imply, that the "Observations on the Blood," &c. should be spoken of in terms exactly antithetical to those we have used in the praise of the labours of MM. Lecanu and Denis. Dr. Stevens' work, in truth, does its author no ordinary degree of credit. But it is more ingenious than sound, and rather establishes for the author a character for a strong and somewhat original power of conceiving theories, than for discovering solid grounds whereon to erect those theories. It is his predominant fault to be over ready at mere assertion. He reasons far too boldly on some things not *fully* proved, and on others not proved at all. Lecanu and Denis, on the other hand, are perfect in all their proofs, never arguing by assertions, but always wholly discarding vague and insecure speculations.

We proceed in the present article to afford our readers an adequate analysis of Dr. Stevens' work, canvassing freely, as we go, its various merits and defects. We shall be aided in our criticism by the data which the French writers afford, and by the experiments of Dr. O'Shaughnessy to which we alluded in a recent number.

Dr. Stevens' book consists of twelve divisions, besides a dedication and a preface. The third portion is entitled "General Observations on the Blood;" the four following sections treat, respectively, of "Animal heat," of "Respiration," of what the author calls the "Latent power of attraction," and, lastly, of the "Vitality of the blood." To these sections, as far as our limits allow, we shall at once direct our attention.

After a cursory description of the mechanical circulation and general functions of the blood, the author rapidly enumerates the chemical constituents, whether proximate or ultimate, of that fluid. In this the only thing requiring especial notice, is the assertion, that the gas (carbonic acid) which the blood contains, exists therein in a *free* or aërial state, and not in a state of solution. This position is to be closely attended to, as we shall subsequently find that upon it the author hinges the remarkable and singular doctrine that the *globular* structure of the blood, about which so much has been written, is an appearance produced by these *free* and spherical particles of gas mixed with blood, and not by the anatomical conformation of the blood itself. We shall not just now inquire into the validity of this opinion, but reserve its discussion till we arrive at the experiments by which the author supports it.

We next have tabular views of the quantities of the constituents of healthy or standard blood, extracted from Lecanu's Essay, as translated in Dr. O'Shaughnessy's Report, and from a paper by Dr. Clanny, published in this journal. The experiments

of the latter, Dr. Stevens deems to be incorrect. We next arrive at some more opinions which are peculiar to the author, and which we shall partly give in his own words.

"The fibrin, the albumen, &c., are naturally solid, and with the exception of the colouring matter, the whole of the solid ingredients of the blood owe their fluidity, not to the presence of a free alkali, but, as I believe, to the circumstance of their being held in solution by a *saline fluid*. While in the circulation, vitality and the incessant motion of the blood tend to prevent the occurrence of those chemical changes that would be fatal to life; but when a part of this fluid is drawn from the system, exposed to the air, and allowed to rest, it loses its living principle, and then those chemical changes are no longer prevented, which are, in reality, the cause of coagulation; consequently it is not the living principle, but the loss of its vitality, which is one cause of the sudden change which the blood undergoes when drawn from the body."—p. 6.

The author distinctly states, in the first sentence, that the fluidity of the albumen and fibrin in the blood, depends on *their being dissolved in a saline fluid*. This is roundly and decidedly expressed, and had the opinion not been qualified in the succeeding sentence, we should have been perplexed to understand how Dr. Stevens could overlook the manifest facts—first, that the blood is just as saline after coagulation as before it; and, secondly, that coagulated albumen may contain just as much water and salts as it did before its coagulation. The truth is, that as yet we are in a state of complete ignorance as to the *cause* either of the fluidity of the albumen, or of its coagulation by heat; and we think that a candid profession of such ignorance, is preferable to the author's attempt to explain these occurrences.

We now arrive at the author's first allusions to the cause of the red colour of arterial blood, and to the various phenomena connected with the changes of colour which the blood undergoes in the circulation. Dr. Stevens commences by stating that when blood first coagulates, it is red throughout, but that when the contraction of the clot is complete, its interior becomes black. He then says, that when a portion of the red clot is immersed in *distilled* (saltless) water, *it* becomes black; that this blackened portion, placed in a saline fluid, again becomes scarlet; that these changes of colour take place in an atmosphere of carbonic acid; that dry saline matter, such as the muriate of soda, sprinkled on black blood, changes the colour to scarlet; that carbonic acid, and all other acids, blacken scarlet blood, even while it contains salts; and, lastly, that blood becomes red when exposed to air or oxygen gas, *only when it contains saline matter*. This latter statement he grounds chiefly on the experiment he describes of scarlet crassamentum becoming *black* when immersed in *distilled* water, and this black clot changing to red in a saline fluid. He states pointedly, and with emphasis, that the immersion in distilled water deprives the crassamentum of all its salts!

Dr. Stevens then repudiates the idea of free carbon existing in venous blood, and he contends for the existence of carbonic acid in that fluid, a fact which we consider is now placed beyond dispute. He then states that oxygen gas possesses a strong power of removing carbonic acid from the blood, by a species of attraction which he afterwards more minutely describes, and to which we may here appropriately allude. It has been for many years known to practical chemists, that gases confined within membranes, in the course of time effect their escape, and mingle with the surrounding air, while a portion of the external air enters the membrane and supplies the place of the expelled gas. The circumstance of experimental balloons of hydrogen gas descending after some weeks elevation in a class-room, without any apparent diminution of bulk, first led to the knowledge of this interchange of gases through membranous partitions. Several years, too, have elapsed since Dr. Andrew Duncan made similar observations on the aërial contents of preparation bottles, half filled with air, and covered with membrane. It seems, however, pretty clear, that Dr. Stevens was the first who distinctly proved that the oxygen of atmospheric air entered a bladder containing carbonic acid, while the acid escaped, or was removed, through the bladder; and he, in our opinion, was indisputably the first who advanced the opinion

that the phenomena of respiration were typified by the interchange of gases thus described.

Thus, it must be conceded, that venous blood contains carbonic acid. Well; in the course of circulation, the blood containing this acid arrives at the expansion of the pulmonary mucous membrane. The carbonic acid then escapes through the membrane, and its place is supplied by oxygen from the atmospheric air. Such is Dr. Stevens's theory concerning the *aërial* changes connected with respiration. When we consider the leading facts he has brought forward in support of this view, and when we bear in mind the admirable manner in which these facts have been examined, experimentally, by Messrs. Mitchell and Faust, of Philadelphia, we cannot but express our belief that, in this respect, the author is correct, and that he deserves our thanks for contributing so importantly to the correction of ancient prejudices respecting the respiratory process.

To revert then to the changes in the colour of the blood, effected during respiration, Dr. Stevens holds that the natural colour of the hematosine (or colouring matter of the blood) is *black*—that it becomes *red* when acted on by *saline matter*—that the reddened hematosine is capable of being *darkened* by all *acids*, including the *carbonic*—and that the carbonic is the only acid which, on its removal, permits the restoration of the red colour. To connect then his theories of respiration and coloration, he would state that the venous *black* blood charged with carbonic *acid*, parts with this when it arrives at the lungs, and receives from the air a quantity of oxygen. The colour then becomes *red*, because the carbonic *acid* is removed, and the salts resume their reddening agency on the black hematosine. But the oxygen, as well as removing the carbonic acid, and thus allowing the blood to be reddened (an event which hydrogen or carburetted hydrogen would equally effect), further answers another great object. It enters the circulation, ready to combine with the carbonaceous ingredients perpetually given off by the changing structures of the body. Carbonic *acid* is thus again formed, heat is evolved, the blood becomes black once more, returns to the lungs, and again undergoes the same process.

Admitting, as we fully do, the truth of the author's views regarding the *aërial exchanges* here described, we are by no means prepared to say that he has *proved* the remaining parts of the hypothesis. Let it be remembered that we merely say, "he has not *proved* them," and that we do not mean thereby to deny the probability of many of the opinions in question.

Of one necessary and essential link in the chain of reasoning, namely, the existence of *free oxygen gas* in *arterial* blood, the author *advances no proof whatever*.

Secondly, when he states that the immersion of the crassamentum in distilled water deprives it of *its* SALINE MATTER, *he is completely in error*. We state it as the result of repeated experiments, that such is not the case, and that the clot thus treated does not lose its saline matter. Dr. Stevens merely *presumes* that it does. We have been convinced that it does not, by direct trial, viz. by macerating the clot after immersion in distilled water, and by weighing the saline matter thus obtained. Thus, in one experiment, 1000 grains of crassamentum, immersed in distilled water for four hours, and then incinerated, gave 3.37 saline matter. A second specimen gave 3.93; a third 3.07. In fact, the crassamentum thus treated yields as much saline matter as it does before the immersion in the distilled water.

Thirdly, Dr. Stevens completely overlooks the fact, that when he speaks of the "*red* crassamentum of recently coagulated healthy blood" he speaks of blood which, in its detraction from the vein, has been ærated—partially arterialized. Let him, for example, open a vein in each arm of a healthy man, receive the blood on one side into an exhausted flask, and on the other in the ordinary way; he will find the crassamentum *black* in the blood received *in vacuo*, and *red* in that received in contact with the air. Let him then immerse the *red* clot in distilled water, and place the vessel in the chamber of an air-pump; as the air is exhausted he will perceive bubbles of gas rising through the water, and, as this happens, the crassamentum becomes *black*. Now this clot does not lose its saline mat-

ter, but it loses the aërial impregnation it had received.

Fourthly, If *carbonic acid*, as Dr. Stevens assumes, is the cause of the black colour of the blood, by preventing the action of the salts on the hematosine, and if oxygen only influences the production of the red colour by removing the carbonic acid (we beg our readers' attention to this), *whatever removes the carbonic acid, leaving the salts, ought to change the colour of red crassamentum to black.* To investigate this point the following experiment was performed. A portion of healthy black crassamentum was placed in the receiver of an air-pump, in a small vessel communicating with another holding lime-water. *On exhausting the receiver the crassamentum gave out* CARBONIC ACID, *and retained its* BLACK *colour.* Dr. Stevens' position is therefore, in this respect, incorrect. We are also bound to say, that in several experiments performed by transmitting a stream of carbonic acid gas through florid colouring matter, the colour was never even once observed to be darkened.

These facts are amply sufficient to bear us out in our refusal to admit Dr. Stevens' views regarding the effect of carbonic acid on the colour of the blood, whether he alludes to its supposed positive agency in *blackening* saline *red* blood, or to the alleged negative circumstance of its absence permitting the restoration of the *red* colour to *black* blood, by the action of the saline matter.

Setting aside then that part of the theory which relates to the effect of carbonic acid on the colouring matter, let us look at the portion which refers to the effect of the *saline* matter. Every nurse in Europe has for a century been aware that the black blood disgorged by leeches after sanguisuction, becomes beautifully bright when common salt, which contains no oxygen, is thrown upon it. From this experiment, with some unimportant modifications thereof, Dr. Stevens concludes that it is saline matter which strikes the red colour in black blood, independent of the agency of oxygen gas, and which thereby causes the change from black to red in the circulation. But having shown above, that the carbonic acid is not concerned in the black colour of the blood, that its presence does not prevent the red colour, and that its absence does not restore the red colour to black saline hematosine, it is evident that *venous blood* ought to be *red*, if the salts were the cause of the red colour, inasmuch as venous blood contains a large proportion of saline matter. Dr. Stevens seems to have apprehended the possibility of this objection, for at page 19 he observes,

"It has been asked, If the saline impregnation be the cause of its red colour, why is it that the blood has a rich scarlet appearance in the arterial circulation, and a dark or Modena red in the venous, which contains as much saline matter as the arterial blood? Now, in the first place, it is not quite true that the venous contains as much saline matter as the arterial; for, with one exception (the bile), the whole of the secretions derive their salts from the arterial circulation, and the venous blood, for example, which is returned from the kidneys or the gastric organs, must naturally contain less saline matter than the arteries, which supply these organs with blood, from which they derive the whole of the saline matter contained in the secretions. We know also that there is a quantity of saline ingredients carried to the muscles and to most of the other solids, and that this is returned, not by the veins, but by the lymphatic vessels. All this, however, is not enough to account for the great difference in the colour of the two fluids; we must therefore look for some other cause.

"Facts, ascertained by experiments, are, or ought to be, the chief foundation of theory; but, unfortunately, from the present imperfect state of animal chemistry, when minute experiments are made, even by the ablest chemists, the results which are obtained are often essentially different, and in some cases diametrically opposite. It is when we find ourselves entangled in such difficulties as these that we are forced to rest our belief less on the result of actual experiments, and more on those facts which are most in accordance with our own observations; but, above all, on the common sense of the argument at issue."—pp. 19, 20.

Dr. Stevens here first denies on *general*, not on *experimental* grounds, that venous blood contains as much salts as arterial. Here he is directly at variance with the experiments of Denis, to whom, at least, the merit of unrivalled accuracy cannot be denied. It surprises us to observe Dr. Stevens's hasty statement, that the *ablest* chemists differ, and that therefore we must distrust experiments, and confide in common

sense. Surely Dr. Stevens ought to know that no chemist of common skill can commit an error in the attempt to estimate the quantity of saline matters in a given proportion of blood. The experiment is so simple that a child might perform it.

The nurse's experiment with the leeches, nevertheless, gives sufficient proof that the *addition* of salt to black blood changes it to a red colour, but it by no means proves that it was the salt which gave that colour. There are more facts than one which strongly tend to prove that, under a multitude of circumstances, water is decomposed, giving rise to the formation of the deutoxide of hydrogen * and other less known compounds. Until this subject is fully investigated, it is premature to conclude peremptorily that the salt was more than an indirect or collateral cause of the change in question; neither are we entitled to infer that the agency of saline matter is the *only* way by which the change from black to red can be accomplished.

Requiring then additional and more unequivocal evidence in those parts of the theory to which we have objected, we remit the subject for the present.

Traité Theorique et Pratique de la Ligature des Artères. Par P. J. Manec, Docteur en Médecine, Premier Prosecteur à l'Amphithéatre Général des Hôpitaux Civils de Paris, &c. &c. &c. Paris, Crochard. 1832.

The treatment of injuries and diseases of arteries is a branch of surgery which requires great promptitude, knowledge, and energy of conduct, on the part of the surgeon. The superiority, in this department, of British surgeons over their continental brethren is unequivocal, and now very generally admitted. This superiority, however, has no earlier date than the time of that extraordinary genius John Hunter, the luminous developments of whose scalpel were so strongly contrasted with the Bœotian obscurity of his pen. The experiments of Mr. Hunter to ascertain the functions of arteries, suggested to our distinguished countryman Dr. Jones the inquiries which he instituted in 1804 and 1805, and contributed materially to the fortunate results of his labours. The demonstrations of Dr. Jones as to the influence of the several kinds of ligatures on the arterial coats were so conclusive, that his views were almost universally adopted, and very generally illustrated in practice in this country. But in France, in consequence probably of the restricted intercourse permitted during the war, the practitioners remained entirely ignorant of the discoveries of Dr. Jones. The first knowledge communicated to the French faculty appears to have proceeded from the superficial work of M. Roux, entitled, "*Parallele de la Chirurgie Anglaise avec la Chirurgie Francaise*," where he speaks in the following terms:—"The English surgeons profess particular views of the mechanism by which nature proceeds in the obliteration of an artery embraced by ligature. These views have led them to adopt a method of making the ligatures themselves act upon the artery, and thus intercept the passage of the blood in a manner strikingly different from ours. They prefer the circular constriction of an artery to its lateral compression (*aplatissment*), and employ not large flat ligatures like ours, but round ones. They apply one only, or two at most, and both are destined to constringe the artery at the moment of the operation, for they do not use ligatures of reserve. They sometimes practise the section of the artery between two ligatures; but this old process recently revived is far from generally adopted." "To determine justly whether the English method or our own is preferable, it is necessary to compare the results of a certain number of operations equally well done according to the respective processes, and under circumstances as similar as possible."

Although the opinion of Roux, as expressed in his work, was manifestly unfavourable to the English method, his less fastidious countrymen, MM. Beclard and Breschet, repeated and modified in every possible way the experiments of Dr. Jones, and the result of their investigations was to the advantage of small round ligatures; so

* See Hudson Gurney's evidence before the Steam Carriage Committee of the House of Commons. *Mechanics' Magazine.* Also papers by Mr. Kemp of Edinburgh, in the late *Edinburgh Journal of Natural and Geographical Science.*

much so, that Beclard immediately adopted them in his practice. In the course of a short time several distinguished surgeons, and amongst others Dupuytren and Larrey, embraced the new plan; but a few surgeons of eminence, holding important offices, held out against the new doctrine, and still continue to resist conviction.

The appearance of Dr. Manec's work is in this point of view not altogether unimportant. It is a work professedly compiled for the use of students and of young practitioners, amongst whom it is one object of the author's labours to imprint a persuasion of the superior eligibility of the small round ligature.

Dr. Manec will be recollected as a hard-working student, not much distinguished by brilliant talents, and subsequently as a demonstrator, at the "Amphitheatre," noted for the vehemence, if not for the emphasis and impressiveness, of his delivery. He opens his work with a rather lengthy introduction, in which a history is given of the several modes of treatment adopted for the injuries and diseases of the arterial system. A rather minute account is given of the anatomy of the several tunics of the vessels, such as must be familiar to every English student that has ever frequented a lecture-room, but which perhaps may not be supererogatory in a work destined for the instruction of French medical students. The various changes produced by ligature on the state of the vessel are well illustrated by plates. Dr. Manec has himself made numerous experiments to establish the truth of the positions laid down by Dr. Jones, and the result of his researches he thinks likely to contribute to render less uncertain and less dangerous the success of these most important operations of surgery.

"We may divide into two classes the facts necessary to be known by the surgeon who wishes to practise the ligature of the arteries. In the first class are to be arranged those general facts which are applicable to all arteries. Thus it is indispensable that the surgeon should know first what change he should effect in the condition of the artery in order to ensure its occlusion; and secondly, what is the preferable means of obtaining the desired result. In the second class we find those particular facts which vary not only in every artery in the body, but at different points of the same artery.

"Our general facts are modified by certain circumstances, which relate to the volume of the artery, and the state of its walls. A knowledge of these can only be acquired by experiments upon animals, the observations upon man being in general so dissimilar, that exact comparison cannot be made. A profound study of descriptive anatomy, and of the anatomy of regions, can alone give to the practitioner that exact and special knowledge of the relation of each artery to the surrounding parts, which is indispensable to success in operating. Thus our general facts all relate to what follows the application of the ligature, our special and topical facts are necessary to the discovery of the artery we wish to tie.

"The reader will, in the first plate of this work, find represented with fidelity the different aspects and transformations which the coats of an artery present, as well as the clot which is formed in its interior, and its changes from the moment when the ligature is closed till the complete occlusion of the vessel, with the variations which these changes exhibit according to the kind of ligature employed. In the twelve last plates I have endeavoured to show, with exactness, the several arteries of the body susceptible of being tied. The relations of these vessels, with the nerves, the veins, and the muscles which surround them, are displayed, and, at the same time, the form and extent of the incision which I have considered most eligible. I have also given to the trunk, and to the limbs of the patient, the respective positions most advantageous for the performance of the operations."

The author proceeds to state, that the first indication to be fulfilled when we wish to produce the obliteration of an artery, is to suspend completely the passage of the blood in its interior. This result is obtained in many ways. 1st, by the simple flattening of the artery, by pressing together its opposed sides, but without lesion of its tunics; 2nd, by the compression of the vessel, with rupture more or less extended of its inner and middle coats; 3rd, by a uniform constriction of the artery, attended with a clear and regular section of the internal and middle coats. Dr. Manec then enters into a voluminous discussion on these several points, which we shall find more satisfactorily handled in the works of Hodgson, Jones, and Hennen: we shall, however,

extract his rather interesting account of the vitalization of the coagulum.

"At the end of eight or ten hours, sometimes a little sooner, sometimes a little later, according to the state of the subject and of the artery, there is formed on the surface of the division of the inner and middle coats an exudation of coagulable lymph, according to certain authors, which unites these parts together; by little and little this matter augments in quantity and consistence almost from its first appearance. The column of blood which beats continually against the obstacle which is opposed to its passage, begins to deposit filaments of fibrin, which are the first rudiments of the clot; these two parts combined, the lymph exuded; and the rudiments of the clot unite, but in a manner so slight, that the least movement of the parts suffices to separate them. This, however, is not the case, when a longer time has been allowed to elapse, twenty-eight or thirty hours for example; then this matter of new formation has considerably augmented in quantity, and increased in its organization; it forms at this period filaments sufficiently tough to hold together the lips of the little wound, which is rarely or never the case before the fifteenth or twentieth hour. At the same time that this organization advances, the clot increases in volume. From the first moment of its appearance, which dates generally from the sixth or from the tenth hour, it is represented by two, three, and sometimes by a great number of little nuclei, which unite into one about the fifteenth or twentieth hour. At this epoch the coagulum does not entirely fill the cavity of the artery; the blood can yet insinuate itself between the surface of the coagulum and the side of the vessel, and is impelled against the cul-de-sac formed by the internal and middle membranes, so that the little clot, though fixed by its base, is constantly agitated by the efforts of the blood.

"This state of things does not last long; the blood deposits every instant new molecules upon the surface of the clot, which is thus made to fill the cavity of the artery; but its development always takes place, first in length and then in thickness. This is proved by what has been already shown, and by what happens when the ligature is placed too near a large collateral branch. In the last case the clot does not acquire the volume necessary to fill the vessel, except to a certain extent, so that in the remainder of its length it is very thin. At other times, and this happens when the collateral branch is still nearer, the clot remains free and floating for its whole length.

"In this state, although the blood reaches to the bottom of the artery, in slipping over the clot, it does not possess at this point sufficient force to detach and carry away with it the unctuous matter which exhales habitually from the internal membrane. On the other hand, this matter, in consequence of the same irritation which the ligature has produced, is secreted more abundantly than in the ordinary state, and is accumulated upon the internal surface of the vessel. It is this bed of unctuous matter which assimilates to the coagulable or plastic lymph of which we have already spoken, and which seems to unite the surface of the clot to the artery. The moment of contact between the clot and the artery is various. In young animals, I have seen it take place between the twentieth and thirtieth hour; but commonly it does not take place till between the thirty-sixth and forty-eighth hour, or even later. At whatever epoch, however, this contact takes place, it effects an immediate adhesion between the two surfaces, like that we have seen, formed between the edges of the inner and middle coats. At first this union is very feeble, but it rapidly acquires a marked consistence. From this moment the unctuous matter is deposited upon the clot, but its exhalation ceases soon after; at least I have never been able to perceive any increase in the thickness of this layer, when its consistence indicated that it had existed six or eight hours. We have already seen how the clot is formed, and that it grows from its centre to its circumference, and we have just seen that the walls of the artery are thickened by the accumulation of unctuous matter upon the internal surface; so that these two parts which grow in opposite directions, the clot from the centre to the circumference, and the sides of the vessel from the circumference to the centre, must infallibly meet sooner or later. The period of their junction presents, as we have seen, numberless varieties, dependent upon a crowd of circumstances, sometimes very difficult to appreciate, and which act sometimes on the clot, sometimes on the artery, and sometimes on both. This coincidence points out to us, that the delay in the union is as often dependent upon constitutional as upon local causes. We find that the general circumstances most favourable to the rapid union of the clot with the artery, are youth and adult ages, sanguineous plethoric temperaments, and inflammatory predispositions, whether inherent in the individual, or excited by the atmosphere."

The author has displayed considerable industry, research, and method, in the compilation of his work; he discusses at length, and with much perspicuity and good sense,

the several questions of round, small, flat, and large ligatures, and of the advantages, or rather disadvantages, of Scarpa's intermediate compress; but he has adduced nothing on these points that may not be found in popular English works. The section on torsion is interesting, and as the subject matter is in some respects novel to our medical literature, we shall translate it.

"Of late years it has been proposed to arrest the progress of the blood in the arteries by the *torsion* of these vessels, and without leaving any foreign body either in the wound or upon the vessel. We shall not here occupy ourselves in inquiries as to whom the discovery or revival of this process is due; it is for those whom the question personally interests to justify their own rights: we shall merely say that this manner of operating was proposed nearly at the same time by MM. Amussat, Velpeau, and Thierry, and that those three surgeons each perform it in a different manner. The two first have never recommended its employment except for the arrest of the hemorrhages which follow great operations, or those which follow the wounding of an artery. M. Thierry further proposes its application in the treatment of aneurisms—that is to say, upon an artery that has preserved its continuity, and which shall have been denuded for the purpose. In these cases M. Thierry slips under the body of the vessel a solid instrument, which is afterwards made to act in the twisting of the artery exactly in the same manner as the tourniquet acts in compression during amputations. If the artery is wounded or cut across, as happens after an amputation, M. Thierry seizes it with a spring forceps, of which the thickness is proportioned to that of the artery, and he twists the artery by rotating the forceps upon itself, five or six times for small vessels, and ten or twelve for large ones.

"M. Velpeau uses also a grooved pincers, or the ordinary dissection forceps; he seizes the arterial tube by its extremity, isolates it with ease from the surrounding parts, and seizes it with a second forceps, a little distance from the extremity of the vessel, whilst by means of the first forceps he twists the denuded portion from three to eight times successively, according to the magnitude of the artery.

"M. Amussat employs in this operation two pincers sufficiently amplicated, each supplied with a little mechanism which tends to hold them firmly fixed; with the one he seizes the artery, and draws it out of the wound with a view of separating it from the adjoining veins and nerves. That done, he applies the second forceps, of which the mandibles are round and smooth, upon the artery immediately above the grasp of the first pair of forceps; he presses strongly upon the branches, to destroy the continuity of the middle and inner coats, and when he supposes this division is complete, he pushes the second forceps towards the undenuded part of the artery, in order to fold upon themselves the two divided tunics. Arrived at this point, M. Amussat holds fixed and immoveable the second forceps, distant at from four to six lines from the first, and at the same time twists with the first forceps, five or six times successively, the cellular coat which has resisted the crushing action of the other.

"By these different methods of torsion, the flow of the blood from the artery is immediately arrested, and that by a sort of button which the two inner tunics form after their laceration, if the method of Thierry and Velpeau be adopted. If the method of Amussat should be chosen, the effect is produced by the doubling upon themselves of the divided tunics in the area of the artery. In these two cases the cellular coat, the only one truly twisted, forms below the button or refold already described a sort of *cul-de-sac*, which, by compressing lightly the obstacle opposed to the *sortie* of the blood, entirely prevents the escape of that fluid. If the blood should insinuate itself through the broken coats, the resistance of this *cul-de-sac* is quite adequate to prevent its emancipation.

"From what I have just stated, it results that the torsion of the arteries, when it is properly effected, arrests hemorrhage with certainty. But that is not the true point of view in which we ought to regard it, for if the only object were the immediate suspension of the bleeding, nothing so surely performs this as the ligature, of whatever kind, if skilfully applied. The real question is, are the consequences of torsion less likely to produce consecutive hemorrhage than the best ligatures? It is in this respect that the surgeons who recommend torsion have most insisted upon its advantages. Dr. Amussat, particularly, thinks that the torsion has great advantages over ligatures, because in employing it we have no foreign body in the body; thence it results that inflammation and suppuration scarcely ever occur, and, consequently, the cicatrization of the parts is more rapid than in the case of ligatures. Unhappily these favourable consequences have not been always observed to follow torsion of the arteries. Many surgeons declare they have seen inflammation and suppuration extend, and last a longer while after amputation, when torsion has been resorted to, than when, in cases nearly similar, recourse has been had to the ligature. Others cite instances of

hemorrhage occurring immediately after the operation, so that the hopes which this process has given rise to ought to be well considered.

"M. Velpeau, who was one of the first surgeons who employed this process, and whose profound medical erudition is universally appreciated, acknowledges now, that the torsion is not eligible in all cases, and that in none has it any real advantage over the ligature. I have never put in practice this hemostatic measure upon the human subject, but I have often made experiments upon dogs and rabbits, in order to compare it with the ligature. In these experiments, I have constantly observed that, after the torsion upon large or medium arteries, the inflammation and suppuration have been stronger, and longer continued, than when the ligature has been placed upon an artery under similar circumstances; and I think it is easy to account for the fact. First, the manipulation is longer, more difficult, and more painful in the use of torsion than in the use of the ligature. If it is desired to practise torsion upon the continuity of an artery, it is necessary to take the same precautions to discover it that we do in applying the ligature. In the last case, however, as soon as the vessel is discovered, we have only to isolate it for a little extent, in order to surround it with a ligature, and the operation is terminated. On the contrary, if it is proposed to make the torsion, the artery being laid bare, there remain several long and painful manœuvres to perform, such as the cutting of the artery with a cutting instrument, its insulation, and the torsion of the two ends which result from the section. It is right to say that no person has ever insisted upon the torsion, in cases where the vessel has preserved its continuity.

"Let us inquire, therefore, whether, after amputations, or the excision of tumours, this method is more easy to practise than that of the ligature. In both processes, it is necessary to seize and to insulate the vessel. For the ligature, the insulation is rendered sufficient by a light traction exerted upon the artery; on the contrary, if it is desired to make torsion, independent of what it is necessary to do for the ligature, it becomes necessary to exert a stronger traction on the artery, in order that it may project five or six lines from the flesh; and as by this effort the veins and nerves are always drawn with the artery, it becomes necessary to separate them, in order to twist the artery only: a precaution which it is scarcely ever necessary to take with the ligature, and which is in no case so long necessary to be continued as for the torsion. When the insulation is complete, it yet remains to make the torsion.

"From what we have just stated it results, that the torsion is an operation more tedious, more difficult, and more painful to perform, than the ligature: there is no exception to this rule, except in the torsion of little arteries. On the other side, if the most accomplished practitioners admit, and, as we think, it has been demonstrated with sufficient detail, that, *cæteris paribus*, the chances of success are greatest when there exists a considerable space between the place where the blood is arrested, and the giving of a large collateral vessel, than when the said distance is short, we must necessarily conclude that the torsion is less admissible than the ligature, since it requires the destruction of a greater length of the coats of the vessel, and that it so far diminishes the strength and length of the coagulum. For example, if the femoral artery were wounded at the distance of two inches below the profunda, a ligature placed above the bleeding point would leave between it and the origin of the great collateral branch, an interval of *twenty* or *twenty-two* lines, which would suffice for the formation of a clot. But if, in the same case, torsion were made, a space of fifteen or eighteen lines would be all that would remain for the development of the clot. If the wound were still nearer the collateral branch, the objection acquires more force, for we have seen that the clot will not form to an extent sufficient to fill the artery, unless there exist a distance of from *eight* to *ten* lines between the ligature and the first branch emanating on the side of the heart.

"Let us examine if the immediate inconveniences we have just mentioned, as attendant upon the torsion of the arteries, are compensated by the advantages which the performance of this operation presents. Far from that. We have already seen that the inflammation and the suppuration are always as long-continued, and sometimes more so, after the torsion than after the ligature. The causes of these accidents are easy of deduction. The first is the length of the operation; the second, one of the most serious, is due to the displacement of the artery in its sheath, in exercising the traction necessary for its insulation; the third is due to the presence of a true *foreign body*, which is more instrumental perhaps in exciting inflammation, than the simple thread which is used in making ligatures. The foreign body is constituted by the tumified and bruised end of the artery, and by the fragments of its inner and middle tunics. These parts of the artery, violently bruised by the torsion, have no vital communication with the tissues which surround them; so that no adhesion can be contracted with them, and they cannot be removed in consequence,

except by the double effect of absorption and suppuration. Until this disappearance is complete, the fragments of the arterial walls support an inflammation and a suppuration as complete as the knot of the ligature before its expulsion. And I declare that every time I have placed the ligature upon the principal artery of a limb in any animal, and used the torsion upon the same artery of the opposite member, I have almost always seen the wound cicatrise more promptly upon the limb where the artery had been tied, than upon that where it had been twisted.

"The torsion practised upon little arteries, has not the same inconveniences as when applied to the larger ones; first, because the process is less operose, and, in the second place, because the arteries of this order are not placed in a peculiar distinct sheath, as we have seen the larger ones are. Finally, the term of the artery when twisted, has but small volume; and in order to ensure the stoppage of the hemorrhage, it is only necessary to make three or four twists. It follows that the life of the part may yet exist, and that this part of the vessel, in becoming a foreign body, does not become the cause of a suppurative inflammation, as we have seen it do when torsion has been practised upon a large artery.

"These considerations, as well as those which precede, lead me to the conviction, whilst acknowledging the merit of the surgeons who have proposed and practised the torsion of arteries, and who have enriched science with a new method of arresting hemorrhage, that we ought to resort to this measure with the utmost reserve, and never upon large arteries."

The author makes many judicious observations upon the treatment of hemorrhage from ossified arteries, and cites the practice of Boyer, Dupuytren, Larrey, Scarpa, and Roux. We regret we have not space for a quotation. His remarks on the treatment of wounded arteries in general, evince much good sense, if not originality, and are well worth the perusal of the medical bookworm. At the conclusion of the book, a distinct summary of the author's opinions and corollaries is afforded to the reader. There are twelve lithographic plates tolerably well executed, but they are decidedly inferior, both in drawing and colouring, to those of our countrymen, Dermott and Webb. The effect is, consequently, very frequently deceptive, the arteries appearing much more superficial than they are in the subject. The dissections also are represented as a great deal too clean, no idea being conveyed of the cellular tissue, veins, and glands, which are to be encountered in the operations. Notwithstanding these faults, the work would make a useful companion in the dissecting-room, and its cheapness places it within reach of every student.

MADAME DE BARRY'S BEQUEST OF HER BODY.

It is but a short time since that one of our highest literary characters terminated a long career, devoted to the spread of useful knowledge, and the propagation of liberal principles, by directing that his body should be dissected after death; thus contributing at the same time to the interests of science, and still more by his example, to the extinction of a strong national prejudice. The example thus set by Bentham has just been followed by a French lady. The name of Madame de Barry will be long remembered and respected by all who can duly appreciate her self-devotion, or who can admire the spirit which, rejecting popular prejudice and early impressions, loved to be useful even in death. We have been favoured with a few particulars connected with the disposal of this lady's body, by a gentleman who assisted at the dissection, and think them not unworthy of public attention.

About the month of April last, Dr. Macartney, Professor of Anatomy and Surgery in the University of Dublin, received a communication from Madame de Barry, the substance of which was, that she wished to bequeath her body to him for anatomical examination. The worthy Professor, ever ready to act as high priest on occasions like the present, waited on the lady, and, as we understand, drew up a testamental instrument in such a form, that the body must be delivered to the Professor of Anatomy, or the property of the deceased would pass from the hands of her surviving relatives. On the death of Madame de Barry, this codicil was found fully to answer the purpose intended; for although five or six different wills were discovered, the eccentric, but high-minded woman, had carefully appended the clause of appropriation to each of them, directing therein that her body should be carried to the anatomical theatre by four poor men, to whom she bequeathed ten shillings each; that it should be dissected by the Professor of Anatomy, and that her skeleton should be prepared and preserved in the Anatomical Museum.

We understand that her skeleton is now being prepared, and that Dr. Macartney proposes to place her heart in an urn beside that of Dr. O'Connor, who has disposed of his body in a similar manner.

This, we believe, is the first example of a woman having bequeathed her body for anatomical examination.

LETTER FROM DR. ELLIOTSON.

To the Editor of THE LANCET.

SIR,—In your last number, I observe a letter from Mr. Jewel, in which he mentions my name very handsomely, but remarks that, in my recommendation of a remedy, originally proposed by him, "a little more courtesy might have been expected from a gentleman, &c., upon the introduction of the subject to the notice of his clinical class."

Being altogether unconscious of any want of courtesy, I have referred to the report of my lecture, and found my words were, "It was originally recommended by a surgeon of the name of Jewel, and in consequence of his recommendation I have frequently employed it."

I can discover no want of courtesy in this; and, at least, I can assure Mr. Jewel that I intended none. My clinical lectures are seldom premeditated; and frequently, as was the case in the present instance, I do not know what I am to speak of till I open the hospital books on the lecture table. Finding a woman admitted with leucorrhœa had left my wards cured, I spoke of her case; and, lest the pupils should think the remedy successfully employed had not been suggested to me by another practitioner, I informed them that, for my knowledge of its utility, I was indebted to a surgeon, and that his name was Jewel.

Nothing is more likely than that, in addressing *pupils* at an easy, fugitive, clinical lecture,—young gentlemen who have not yet had time to become acquainted with the names and histories of the numerous great authors in our profession, I might, when speaking of membranes, *incidentally* tell them, that the best work upon the subject was by a "French physician of the name of Bichat;" or, when speaking *incidentally* of the discovery of the circulation, that it was made by "a physician of the name of Harvey."

Those of Mr. Jewel's friends who best know me, will feel assured that I could have intended no discourtesy, more especially since, from my never having had the honour of seeing that gentleman, or of having the most indirect communication with him, there could not have been the slightest provocation.

Although I *never* reply to mere attacks, I shall *always* be happy to do my best immediately to remove an *erroneous* impression of intentional incivility or unkindness from any one who complains of me.

I have the honour to be, Sir,
Your obedient humble servant,
JOHN ELLIOTSON.

37, Conduit-street, Hanover-square,
August 18, 1832.

THE ANATOMY BILL.

To the Editor of THE LANCET.

SIR,—A clause in the new Anatomy Bill directs that "each body, after undergoing anatomical examination, be decently interred," &c., "and that a certificate of the interment of such a body shall be transmitted to the inspector of the district within six weeks after the day on which such body was received." Now let me observe, Mr. Editor, that if this act be honestly carried into effect (and an act of Parliament is of no use unless it be), the procuration of skeletons will be at once completely prevented, saying nothing about the impossibility of preserving bloodvessel preparations, which by-the-by are certainly not so necessary as skeletons, when there is plenty of dissection. Surely we were all asleep when we allowed this to become law, without objecting to it. There should, at all events, be some clear mode left open for procuring skeletons, which there does not at present seem to be now, and without it the profession, and even the welfare of mankind at large, will be in a desperate condition; for how necessary is it for both students and practitioners to have an abundant collection of bones of their own, not only for the purpose of making and keeping themselves familiar with osteology, but also with the nature and method of reducing fractures and dislocations! I remain, Sir,

Your obedient servant,
G. D. DERMOTT.

Theatre of Anatomy and Surgery, Westminster Dispensary, Gerrard Street, Aug. 20th.

*** Whatever may be the defects of the Anatomy Bill, it must be quite obvious to the readers of this Journal, that THE LANCET is in no degree accountable for them. We opposed the measure because we discovered its inadequacy for gaining the object in view. The supporters of the Bill were undoubtedly actuated by good motives, but their knowledge of the subject was, from the outset, too evidently, lamentably indifferent.—ED. L.

TREATMENT OF THE

MALIGNANT CHOLERA AT LEEDS.

To the Editor of THE LANCET.

SIR,—Having been deputed by the Board of Health of Skipton to visit the towns of Leeds and York, for the purpose of witnessing the effect of the different remedies employed in the treatment of cholera, you will perhaps permit me to occupy a small part of your ensuing number with a summary of my observations and inquiries.

The injection of a saline solution into the veins, as recommended by Dr. Latta, had been extensively tried in Leeds, and I regret to state that it had not been found to answer the sanguine expectations which its first announcement created. In all cases it has certainly afforded wonderful temporary relief, but in none did any permanent benefit accrue. The medical gentlemen had consequently been reluctantly compelled to abandon the plan. Mr. Teale, surgeon of the Holbeck Cholera Hospital, assured me that he should not think himself justified in again having recourse to it, unless it should prove far more successful in the hands of others than it had done in his own. In this opinion I fully concur, and I was therefore not a little surprised to observe in the last LANCET the cases of Dr. Girdwood, and your comments thereon. Allowing these to have assumed a very malignant character, and to have recovered solely from the use of the injection, still I should scarcely think they would warrant the general adoption, or, I should rather say, revival of this remedy, when such a long list of failures can be opposed to them. Very few will, I believe, be able to agree with Dr. Girdwood, that the operation, should it do no good, will not, at least (if properly performed), do any harm. If this were the case, what could induce Dr. Anderson, R.N., to state that he should in future be disposed to abstract blood from one arm at the same time that he introduced the injection by the other, were it not that his experience had taught him the great danger of producing congestion of some internal organ?

The treatment which was then pursued was nearly similar in both towns. When a patient was admitted in the collapsed stage, tins containing hot water, and suitably shaped, were applied to the abdomen, back, and feet, the body being previously surrounded with a blanket. These retain the heat for a long time, and had been found to answer better than any kind of bath in restoring the natural temperature. Should the prostration of strength be extreme, reaction was assisted by the internal administration of strong stimulants, consisting chiefly of ammonia and camphor. A scruple of calomel, uncombined with any other medicine, was then given every hour, until the severity of the symptoms had abated. The quantity was then lessened, and the interval between each dose increased. Six or eight doses had been generally sufficient to arrest the vomiting and purging, and to excite the biliary secretion. It had rarely been necessary to push the mercury to salivation, although I think it would be advisable gently to touch the mouth, with the view of lessening the consecutive fever. Mr. Morley, the resident surgeon of the hospital in Marsh-lane, Leeds, gave in addition to the above the saline draughts and enemas advised by Dr. Stevens; but he had not then had sufficient experience to enable him to form an opinion of their value. This was prior to the exposure of the cases in the Coldbath-fields prison.

At the York Cholera Hospital, re-action was also promoted by the powerful enema of the spirits of turpentine in some thick mucilaginous medium, as much as six ounces, being (in extreme cases) thrown up at once. This was retained in the manner suggested by Dr. Clanny, of Sunderland, for a length of time, proportioned to the symptoms, and had been found to be very serviceable in restraining the excessive and exhausting evacuations. Dr. Goldie and Mr. Anderson, the medical officers of the institution, spoke very favourably of its effects, and I certainly think it worthy of a more extensive trial.

Mr. Teale told me that in some there had been no preliminary diarrhœa, and in a few he had noticed the diabetic state mentioned to him, I understand, by Dr. O'Shaughnessy. He had found also the consecutive fever more difficult to manage than the stage of collapse, and he avoided, therefore, as much as possible giving opium, in consequence of its tendency to produce a determination to the head.

The cases in Leeds had all occurred in low, damp, filthy, and confined situations, where malaria would be expected to prevail, indeed a line might be drawn round the infected district beyond which the disease had not then extended. As many as eight cases had taken place in one house, five of which had terminated fatally. The majority of the medical gentlemen were, consequently, non-contagionists. The same remarks, with a few exceptions, will apply to York. I remain, Sir,

Your very obedient servant,

RICHARD BIRTWHISTLE,
M.R.C.S.L., and Ass.-Surg. R.N.

Skipton in Craven, August 20, 1832.

ACUPUNCTURATION. INSERTION OF THE NEEDLE IN A JOINT.—Note by Mr. Brett on Acupuncturation, for the cure of chronic rheumatism in natives of India, dated March 22, 1831. I embrace the present opportunity of adding my testimony to the many already on record, of the great advantages to be derived from acupuncturation in cases of *chronic rheumatism*, having employed this remedy with much success in the cases of natives, who had been suffering long and severely from the above disease. The cure or alleviation of the complaint is so general and so prompt, that I cannot hesitate to recommend its frequent trial; knowing as I do, from experiments on my own person, that its application is, comparatively speaking, void of pain: and from having myself obtained by this remedy a cure from severe suffering. In my own case the needles were inserted to the depth of an inch and a quarter, and allowed to remain in for two hours. Dr. Elliotson, in his admirable clinical lecture in the 327th Number of THE LANCET, page 337, observes, "of course you would not think of introducing a needle into a joint." With every respect for so eminent a physician, I think, from a knowledge of the safety with which loose cartilaginous substances are extracted from joints, we need not hesitate to introduce a needle for the purpose of curing protracted chronic rheumatism, adopting the precaution, before introducing the needle, of drawing the skin aside so as to prevent a direct communication with the joint after the needle is withdrawn. In one instance I have successfully treated chronic rheumatism of the knee-joint, by introducing a needle in this manner into the joint, and without any apparent evil consequences.—*Trans. of the Calcutta Med. and Phys. Soc., vol. 7.*

*** Dr. Elliotson was too cautious a practitioner to recommend the insertion of needles into joints, in a lecture delivered to pupils, especially if he had no facts on which to ground such a proposition, and still more especially since he advised that the needle should always be left in the part for one or two hours,—the operation, too, generally requiring repetition, often several times. The statement of Mr. Brett is not without interest in the treatment of chronic rheumatism by acupuncturation, and, doubtless, when the fact of the innocence and utility of acupuncturing joints is established on the experience of others, and confirmed in his own practice, Dr. Elliotson will take a suitable opportunity to recommend it.—ED. L.

LETTER FROM MR. HART.

To the Editor of THE LANCET.

SIR,—Appended to Dr. Hancock's letter, in your Journal of the 18th inst., is a note containing a most illiberal, and certainly unjust, reflection on the "inconsistencies" (?) of certain medical writers, and of one gentleman in particular, who has lately set forth "experiments," which are termed the results of cholera cases, treated chiefly with corrosive sublimate and acetate of lead. Now, as these remarks evidently apply to me, I beg you will do me the justice to insert the following:—In the first place I may observe, that the cases above alluded to were communicated to the Board of Health not as mere experiments, but as the result of considerable practice, which has established my firm conviction of the decided success to be derived from the treatment of cholera with mercury. To remove the charge of utter ignorance of the action of remedies imputed to me, it is only necessary to say, that with the publishing and consequent heading of the article (upon which Dr. Hancock grounds his charge), I had nothing to do. Furthermore, I will observe that out of forty-seven cases of malignant cholera, treated after the same manner, only nine have died! That in no one instance has excessive ptyalism been produced by the corrosive sublimate, neither have I met with a single case of consecutive fever, after the abatement of the primary disease. These are facts, and, with the exception of Hubbard's case, no one has taken the additional quantity of opium. I have been induced to make the above observations, in the hope that, should any one feel inclined to make a proper trial of them, they will not be found *entirely useless* remedies. I am, &c.,

F. J. HART.

TO CORRESPONDENTS.

A Constant Reader.—Under the present arrangements, a two years' sessional residence at Glasgow is indispensable. A large portion of the lectures is, of course, attended during this period, but certificates of lectures delivered in other universities and recognised schools, are admitted in part, as claims for the examination.

Amicus' letter shall be inserted and noticed next week.

Junius was squeezed out.

Mr. L. S. T. More than sixty such applications have been made to us within the last two months. Each has equal claims on our attention. Thus circumstanced, we are totally precluded from lending the columns of this Journal to the purposes of individual charity.

The Crown has appointed Dr. Traill of Liverpool to the vacant chair of Materia Medica in the University of Edinburgh.